Dynamic Shifts in Work Ethic: Examining COVID-19 Pandemic Induced Changes in the Workplace

Hannah Nelly Müllers

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Department of Psychology
University of Groningen
Examiner/Daily supervisor:
Dr. Anita Keller

Abstract

Work ethic is an attitudinal construct which gives insight into how important and central people find work in itself to be, and while it is argued to be stable, under certain conditions it may be susceptible to change (Arciniega et al., 2023). The present study investigates the dynamic changes in work ethic during the COVID-19 pandemic and potential factors that may contribute to said changes. Existing research suggests that employees experienced an increase in workload during the pandemic (Eurofound, 2022), leading to affective irritation (Scheel et al., 2023) and negative job attitudes (Van Ruyssefeldt et al., 2022), and argued to negatively affect work ethic (H1). It was further hypothesized that this relationship is mediated by changes in job satisfaction (H2) and that any short-term changes in work ethic would return to baseline levels in the long term (H3). Utilizing archival data from the LISS panel in a 4-year longitudinal study of Dutch full-time employees indicated no direct or mediated effect between the study variables. An indirect effect between job satisfaction changes and work ethic changes was found, showing that these two attitudinal constructs are closely connected. The study adds to existing literature by employing longitudinal data that highlight the possibility of changes in work ethic under specific conditions and open the door to further research avenues.

Keywords: work ethic, workload, job satisfaction, COVID-19 pandemic, employees

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Though work has been a well-established part of life and humanity for several thousand years, it appears to be gradually becoming more important and central to self-view and identity (Budd, 2011). Some researchers refer to work as "one of the primary settings of adult life (Le et al., 2013, p. 1) highlighting the increasing centrality that work takes in life and the amount of time that is spent in the workplace. The importance of work can be viewed from different perspectives, ranging from a necessity to survive to contributing to one's identity and self-view (Budd, 2011). The importance and value people prescribe to work in itself, and the attitude they have regarding the importance of hard work is captured by the concept of *work ethic*. Existing research is not entirely clear on the stability of work ethic (Arciniega et al., 2019), suggesting that under certain circumstances, such as the experience of strong life events, people may undergo short-term or long-term changes in their attitudes toward work (Arciniega et al., 2023). One such strong life event that occurred in the recent past is the COVID-19 pandemic. It affected several life domains, including work, raising the question of how it may have shifted individuals' work ethic.

The current paper aims to firstly identify potential factors that may contribute to changes in work ethic, namely changes in job satisfaction and changes in workload. Job satisfaction and work ethic share certain similarities in that both constructs measure attitudes toward work. While job satisfaction reflects the (positive) appraisal of one's experiences at work (Montuori et al., 2022), work ethic reflects attitudes toward work as a concept in itself (Miller et al., 2002). Further, lower job satisfaction has been shown to be associated with higher turnover and absenteeism rates (Baker, 2004), whereas a higher work ethic is associated with increased task motivation (Meriac et al., 2014). While both job satisfaction and work ethic are argued to be somewhat stable (Bowling et al., 2005; Miller et al., 2002),

whether this holds in the context of strong events such as the COVID-19 pandemic is up for speculation. One working condition that changed significantly for many employees due to the pandemic is workload. As such, considering its potential effects on job satisfaction and work ethic offers a unique opportunity.

Secondly, by conducting a longitudinal study I hope to be able to contribute to research regarding the short-term and long-term stability of work ethic. Since both job satisfaction and work ethic are considered to be stable (Bowling et al., 2005; Miller et al., 2002), it may be that any observed changes are not long-lasting. In other words, it may be possible that the adverse conditions that employees faced during the COVID-19 pandemic led to short-term changes in job satisfaction and work ethic, but that these effects did not last long-term. By utilizing longitudinal data, it is both possible to observe any changes over an extended period of time and make inferences about temporal precedence.

Lastly, the COVID-19 pandemic as an event that "changed the global context" (Hernández-Linares et al., 2024, p. 3) creates a unique opportunity to study human behavior and attitudes as a response to external factors. As such, this study delves deeper into the mechanisms of attitudinal change to understand which factors can potentially lead to changes. Specifically, I will investigate whether changes in workload lead to changes in work ethic and whether this effect is mediated by changes in job satisfaction.

Knowing if work ethic changes in the context of a strong global event can provide insight into its stability and possibly allude to situations or contexts in which it may not be stable. Additionally, looking at the connection between workload and work ethic may provide the basis for practical advice for policymakers and employers on a factor that may affect work ethic and highlight potential risks.

Work ethic

Since Max Weber first introduced the construct of 'Protestant work ethic' in 1905, researchers have been inspired to research this construct and have redefined it countless times (Furnham, 1984; Meriac et al., 2014). According to Miller and colleagues (2002), modern approaches to conceptualizing work ethic "tend to view work ethic as an attitudinal construct pertaining to work-oriented values. An individual espousing a high work ethic would place great value on hard work, autonomy, fairness, wise and efficient use of time, delay of gratification, and the intrinsic value of work" (p. 454). They further posit that work ethic is not tied to a specific job or religious values, can be learned, and refers less to behavior and more to attitudes and beliefs that can be reflected in behavior.

The multidimensional nature of work ethic and its varying definitions make it difficult to understand exactly what contributes to one's work ethic. If work ethic can be learned, but is not tied to a job or religion then what contributes to changes in work ethic? The current paper aims to investigate the role of two factors, namely workload and job satisfaction, and answer the question of whether changes in workload and job satisfaction affect employees' work ethic and lead to changes thereof.

The COVID-19 pandemic and its potential impact on work ethic

While work ethic is argued to be a relatively stable set of attitudes (Arciniega et al., 2019), under unprecedented circumstances, these attitudes may shift. Attitudes are defined as the "mindset or tendency to act in a particular way due to both an individual's experience and temperament" and are seen as "a complex combination of things we tend to call personality, beliefs, values, behaviors, and motivation " (Pickens, 2005, p. 44). Albarracin and Shavitt (2018) highlight whether or not attitudinal change can be explained depends on how attitudes are defined. They posit that most likely, attitudes are a combination of fixed memory and momentary evaluations. Generally, attitudes can change as a cause of a variety of evaluative

processes and in different contexts. One such context is the historical context, which includes historical events. Researchers have found shifts in attitudes as a response to events such as hurricanes, financial crises, or political power shifts (Albarracin & Shavitt, 2018). One such occasion, which may also be classified as a historical event and which had had strong global effects was the COVID-19 pandemic.

According to McFarland and colleagues (2020), the COVID-19 pandemic constituted the first strong global event of its magnitude since the 1918 flu epidemic, and as such it was highly novel. It had widespread effects on several life domains and could therefore be extremely disruptive. One of these domains was work, especially working conditions, job security, and external factors contributing to work performance (Kramer & Kramer, 2020). Such strong events can produce short-term and long-term changes in behaviors with some researchers even suggesting it can be considered a turning point "in many facets and especially in working life" (Hernández-Linares et al., 2024, p. 4). Since work ethic encompasses attitudes that are reflected in behavior (Miller et al., 2002), taking a closer look at such behavioral changes may give an insight into connected attitudinal changes. The pandemic could be seen as a breeding ground for change and offers a unique opportunity to follow potential temporal changes in work ethic levels.

A study conducted among Flemish employees at the onset of the COVID-19 pandemic (Baert et al., 2020) suggests that there is a common fear of the negative impact that the pandemic will have. More than a quarter (27.5%) of the participants expected a decrease in their work motivation and 51.8% indicated that working conditions would gain in importance. While the researchers note that this study does not constitute an objective prediction, it does allude to the general sense of uncertainty in society at the time.

Arciniega and colleagues (2023) conducted a study among a Mexican sample that measured the stability of work ethic before and after the COVID-19 pandemic. They

classified work ethic into three different profiles: live to work, work to live, and work as necessary evil. By assigning each of the participants to one of these profiles before the onset of the pandemic (March 2020) and after most pandemic-related measures were dropped (June and July 2022) they were able to draw the following conclusions. Before the onset of the COVID-19 pandemic, a higher level of education predicted being assigned to the 'live to work' profile and therefore showing a higher work ethic level. In the post-lockdown sample, however, education level no longer mattered but instead the older an employee was, the more likely it was that they were in the 'Live to Work' profile. What's more, one in five participants moved from the "Work to Live" profile to the 'Work as a Necessary Evil' profile suggesting a significant change in work ethic levels and the proportion of employees per individual profile pre and post-pandemic. While this shows that the COVID-19 pandemic can influence work ethic, there are considerable gaps in the study. Firstly, the sample consisted only of employees from one company, thereby limiting the variability of different working conditions and other important factors in the workplace. Second, and more importantly, the researchers were not able to follow individual changes in work ethic levels but rather showed a shift in the distribution of employees between the three different profiles. This makes it impossible to say anything about the precise temporal changes in individual work ethic. While this may be the case, their research does highlight the effects of the COVID-19 pandemic on work ethic levels and a shift in the distribution between the different profiles.

Workload and work ethic

According to Eurofound "working conditions refers to the working environment and aspects of an employee's terms and conditions of employment" (2011, Working conditions). This encompasses amongst other things, the organization of work activities and working time, as well as well-being and work-life balance. Studies have shown that an individual's well-being can be affected by the level but also more importantly, by changes in working

conditions. In a recent study, Meier and colleagues (2023) investigated changes in job resources and job stressors, demonstrating that an increase in job stressors decreases employee well-being while decreases in job resources have less of a strong effect. One of the job stressors most consistently predicting different well-being indicators in this study was workload. Workload refers to the number of tasks that an individual is expected to perform within a certain time frame, and the individual's ability to do so (Cain, 2007).

Research conducted during the COVID-19 pandemic showed an increase in workload (Syrek et al., 2022) and a research report investigating working conditions in times of the COVID-19 pandemic (Eurofound, 2022) further highlighted the following relevant findings. At the onset of the COVID-19 pandemic, with the introduction of measures to contain the spread of the COVID-19 virus, an abrupt change happened for many employees. Some had to start working from home, while others endured higher workloads and more pressure. DiStaso et al. (2020) call this a *disruptive workload change*, which refers to a "rapid workload change that is instigated by extreme contexts external to the organization" (p. 37). For some time, these changes intensified job demands (Scheel et al., 2023) and *while routine workload changes*, expected changes in workload (DiStaso et al., 2020), are studied well, disruptive workload change is not.

Work intensification, the increased difficulty of accomplishing work that used to be routine but requires a new approach or includes additional tasks as a result of the COVID-19 pandemic, has been shown to be positively related to affective and cognitive irritation (Scheel et al., 2023). A recent study additionally found that an increase in workload leads to organizational cynicism, and a negative job attitude (Van Ruyssefeldt et al., 2022). This negative job attitude and affective irritation may in the long run manifest itself and change an individual's assessment of work, and hence lead to a lower work ethic.

Hypothesis 1. An increase in workload from T0 to T1 leads to a decrease in work ethic between T1 and T2.

Job satisfaction and work ethic

One attitude that goes hand in hand with working conditions is job satisfaction. Meta-analytical research by Humphrey and colleagues (2007) shows that a variety of work design characteristics account for an average of 43% of the explained variance of work outcomes. Specifically, motivational characteristics accounted for 34% of the variance in job satisfaction, with incremental validities of social characteristics and work context characteristics which explained a further 17% and 4% respectively. Job satisfaction is defined as the sense of achievement that one gets from doing their job, and the "sum of the evaluations of the discriminable elements of which the job is composed" (Locke, 1969, p.330). Job satisfaction is generally regarded as a positive state and has been shown to have protective effects (Baert et al., 2020). Grabowski et al. (2021) draw a connection between job satisfaction and work ethic. Both job satisfaction and work ethic can be seen as a form of motivation and if an employee is satisfied with their job, they may experience two types of motivation. Firstly, internal motivation to work hard in order to feel like they are positively contributing. Secondly, external motivation to gain resources (e.g., status, salary). Since work ethic is regarded as behavior that reflects attitudes (Miller et al., 2002) and motivation can be a driving force behind goal-directed behavior, the motivation that employees may gain or lose due to changes in workload could potentially affect their attitudes toward work in itself.

Bowling and colleagues (2005) state that while job satisfaction is relatively stable, it can be impacted by circumstantial factors. While there is ample research investigating the effects of planned organizational interventions, one aspect that has not yet been extensively researched is how changes in work design, and specifically changes in workload that happen

as a consequence of a major event impact job satisfaction. Most research concerning the stability of job satisfaction highlights that it can be negatively affected by (major) workplace events (Bowling et al., 2005; Champoux, 1978; Montuori et al., 2022). Furthermore, according to Blood (1969) "the way a person evaluates work in general should be related to his attitudes toward his particular job" (p. 456). By this, he means that people with a higher work ethic level also have a higher level of job satisfaction. This effect may also work in the opposite direction, with job satisfaction affecting work ethic levels. As such, it is plausible that negative feelings toward one's own job (i.e. low job satisfaction) lead to negative feelings and attitudes towards work as a whole, and hence a lower work ethic.

Hypothesis 2. Increases in workload from T0 to T1 reduces job satisfaction between T0 and T1, and leads to decreases in work ethic between T1 and T2.

To better grasp the dynamic changes it is imperative to investigate whether short-term fluctuations manifest in the long-term or if they revert back to baseline. A field study found that job design changes had a short-term positive effect on job satisfaction, however, in the long term job satisfaction went back down to a set point (Champoux, 1978). Another study found the opposite effect, namely short-term negative effects because of having to attend to the demands of several roles, which disappeared again after some time (Williams et al., 1991). A third study examined the long-term changes in job satisfaction after the introduction of a job enrichment program (Griffin, 1991). Initially, job satisfaction increased significantly, however, this effect was gone after two years, and job satisfaction returned to the baseline level. Hence, there seems to be a pattern of sudden change leading to short-term negative effects (Champoux, 1978; Griffin, 1991; Williams et al., 1991). This is in line with dynamic

equilibrium theory, which proposes that values change temporarily because of change in the environment, but return to equilibrium level (Specht et al., 2014).

In the context of this paper, I assume that work ethic levels are negatively affected by an increase in workload within the context of the COVID-19 pandemic. Since job satisfaction and work ethic are both attitudinal constructs, I hypothesize that dynamic equilibrium theory may also apply to changes in work ethic. As such, the initial negative effect on work ethic is likely to be short-term and I expect it to return to a set point in the long run.

Hypothesis 3. Work ethic at T3 will not be significantly lower than it was at T0, Hence returning to its set point in the long run.

Method

Participants and data collection

For the current study, I used archival data of participants who were part of the Longitudinal Internet studies for the Social Sciences (LISS) panel. "The LISS panel is a representative sample of Dutch individuals who participate in monthly internet surveys. The panel is based on a true probability sample of households drawn from the population register by Statistics Netherlands. Self-registration is not possible, and households that would otherwise be unable to participate are provided with a computer and internet connection. The longitudinal LISS Core Study, consisting of separate topical surveys, has been conducted in the panel every year since 2007, covering a large variety of domains including health, work, education, income, housing, leisure and time use, political views, values and personality" (Scherpenzeel & Das, 2010, Referencing and citing the LISS panel).

In the context of this paper, data from the LISS panel from 2018 to 2023 was utilized. With a time lag of one year, this resulted in a longitudinal design with four time points, of

which one was before the pandemic (T0), two during the pandemic (T1 and T2), and one at the end/after the pandemic (T3).

Initially, a total of 12,253 participants were present after merging the data files of the four individual time points provided by the LISS. This included respondents who had filled in one of the surveys at one of the four time points. Since the data of two core studies of the LISS panel from four time points were all merged together, the number of respondents who had not filled in the survey at all four time points was rather large, leading to a significant decrease of the sample when excluding them. To warrant the accurate measurement of changes in workload and its effect on job satisfaction, as well as work ethic, participants were removed if they indicated that they did not hold a job at one or more time points. Since the LISS panel does not remove respondents if they did not fill in a survey at one point, and includes people of all ages, as well as those who may not hold a job (e.g., retirees & students), the number of participants to be considered further reduced significantly. A total of 10,850 participants were removed, leaving a sample of 1403 participants.

Next, participants who contractually were employed for less than 34 hours a week (784 participants), which is the standard for full-time employment in the Netherlands, as well as those who indicated that their primary occupation was something other than paid employment (23 participants) were removed, leaving a sample of 596 participants. Upon close inspection, I noticed that several participants indicated that their actual working hours were not the same as their contractual hours, with some participants indicating 40 contractual working hours but later specifying that they worked less than 34 hours (full-time) or in several cases even no hours at all on average. This resulted in a further exclusion of 207 participants, whose actual working hours were lower than 34 hours per week, and the final sample included 389 participants.

Of those 389 participants, 285 (73.3%) were male and 104 (26.7%) female. The sample was predominantly of Dutch origin (81.76%). It was highly educated with more than half (50.7%) having finished WO (University) or HBO (higher vocational education), and a further 27.5% having finished MBO (intermediate vocational education). The participants were between 20 and 76 years old at the start of the study, with a mean age of 45.58 years (*SD* = 10.47). During the entire study period, participants contractually worked 38.45 hours (*SD* = 1.74) on average, however, they indicated to really work 40.99 hours (*SD* = 4.42) on average. The sample worked in a variety of fields, such as industrial production, government services, transport, agriculture, catering, healthcare, and education. Over the study period, some participants started working in a different field, however, the overall distribution of participants per field remained relatively stable over time. As such, the fields that were mostly represented were industrial production, government services, business services, and healthcare. Fields that were represented less were agriculture, utilities production, catering, and environmental services.

Measures

Since archival data from the core studies was used, there was a large variety of variables, not all of which were of relevance to this study. The variables that were of interest in the current study are listed below.

Workload

I utilized four items of the employment conditions scale which measured different aspects of workload, namely required mental effort (e.g., *Does (/did) your work require mental effort*) and concentration (e.g., *Do (/did) you need to work with a lot of concentration*), an expectation of working overtime (e.g., *Are (/were) you expected to work overhours?*) and perceived busyness (e.g., *Does (/did) your work ever get too busy?*). All items were measured on a 3-point Likert scale, with 1 = often, 2 = sometimes and 3 = never. To reflect an increase

in workload and make interpretation easier, I reverse-coded the workload scale with higher values reflecting a higher workload. Cronbach's alpha varied across the individual time points, with an alpha of 0.62 at T0, 0.61 at T1, 0.60 at T2, and 0.51 at T3. Since the deletion of any item would not have resulted in a higher Cronbach's alpha and no construction of a better scale was possible given the restrictions of using archival data was possible, I decided to proceed with using the scale, nonetheless.

Job satisfaction

To measure job satisfaction, four items assessing work satisfaction and one item assessing income satisfaction were combined. All five items were measured on a 10-point Likert scale, ranging from 1 (*not at all satisfied*) to 10 (*fully satisfied*). Participants were asked to indicate how satisfied they were with their work and certain aspects of their work. Example items include: *How satisfied are you with your working hours; How satisfied are you with your current work?* and *How satisfied are you with your wages or salary or profit earnings?* The Cronbach's alpha for job satisfaction also varied per time point, with an alpha of 0.79 at T0, 0.82 at T1, 0.84 at T2, and 0.79 at T3.

Work ethic

A total of four items reflecting work ethic asked participants to indicate their agreement with each on a 5-point Likert scale, ranging from 1 (*fully disagree*) to 5 (*fully agree*). The items included *You can only do what you feel like doing after you have done your duty; If someone wants to enjoy life, he/she must be prepared to work hard for it; I feel happiest after working hard; Work should always come first, even if it means having less leisure time*. For work ethic, Cronbach's alpha varied between 0.67 at T0, 0.69 at T1, 0.69 at T2, and 0.76 at T3. Same as with the workload scale, the deletion of any items would not have led to a higher Cronbach's alpha, and since the individual scores were relatively close to 0.70,

I again decided to proceed with using this scale and will address the relatively low reliability as a limitation.

Control Variables

As the study by Arciniega and colleagues (2023) on the stability of work ethic profiles suggests, before the COVID-19 pandemic, a higher education level was correlated with being assigned to the ‘Live to Work‘ profile, therefore having a higher work ethic level. However, after the pandemic, education level did not have a significant effect any longer and instead a higher age did. An exploratory analysis showed that age did not have a significant correlation with work ethic levels at any of the four time points in this sample, and level of education (measured as a dummy variable where 0 = not highly educated and 1 = highly educated) was only significantly correlated with work ethic at T0 (r = .11, p = .035) and T3 (r = .11, p = .034). The analysis additionally showed a significant correlation between level of education and workload at T2 (r = .14, p = .006) and T3 (r = .11, p = .039), as well as significant correlations between level of education and job satisfaction at all four time points (see Table 4). No other variables were significantly correlated to any of the study variables. As such only level of education will be considered as a control variable.

Data Analysis

To conduct the statistical data analysis SPSS version 29 and Hayes’ PROCESS macro v4.2 were used. After merging the individual data sets, adding the demographic variables, and cleaning the data, scale means were conducted for all three variables at each of the four time points. To check for changes between the time points, I calculated the change scores from T0 to T1, T1 to T2, and T2 to T3 for all three variables by subtracting the later time point (e.g., T1) from the preceding time point (e.g., T0). Additionally, I conducted a repeated measures ANOVA for each study variable to determine if changes in variables were linear, quadratic, or cubic and to visualize temporal changes between the time points.

As preparation for the regression analysis, the data was checked for linearity, multicollinearity, homoscedasticity, and normal distribution of data. Finally, data was analyzed employing Hayes' PROCESS macro v4.2 to run a regression analysis and test the relationship between workload changes between T0 and T1 and work ethic changes between T1 and T2, with job satisfaction changes between T0 and T1 as a mediator, as well as age and level of education as control variables. To account for a possible temporal shift in the hypothesized effect to a later time point I ran a post hoc analysis. This was done to test whether there is an effect of workload changes between T1 and T2 on work ethic changes between T2 and T3, with job satisfaction changes between T1 and T2, as well as age and level of education as a control variable.

Results

Preliminary Analysis

Table 1 shows an overview of the demographic variables. The division of participants among different fields of work can be found in Table 2. Mauchly's test of sphericity showed that the sphericity assumption was violated for workload, $\chi 2$ (5) = 16.35, p = .006, as well as job satisfaction, $\chi 2$ (5) = 51.22, p = <.001. Since this decreases power and increases the chance of a Type I error, the interpretation of results should be done with caution. In both cases, Huynh-Feldt correction was used in further analysis. The sphericity assumption for work ethic was not violated, $\chi 2$ (5) = 2.45, p = .78.

Change Scores and Change Patterns

The Repeated Measures ANOVA for workload showed that there was a significant within-subjects effect F (2.934, 1068.053) = 4.23, p = .006, partial η^2 = .01, and support for a quadratic relationship F (1, 364) = 6.18, p = .013, and a cubic relationship F (1, 364) = 4.00, p = .046. Looking at the mean change scores, the average change of the sample from one time point to the next, of workload shows the following. Employees on average experienced a

significant decrease *in* workload from T0 (M = 2.45, SD = .37) to T1 (M = 2.40, SD = .36), t (374) = -3.15, p = <.001. The increase from T1 (M = 2.40, SD = .36) to T2 (M = 2.41, SD = .36) was not statisticall significant, t (375) = 1.01, p = .156. Between T2 (M = 2.41, SD = .36) and T3 (M = 2.41, SD = .34) was also not statistically significant, t (373) = -.09, p = .464. visualization of these changes can be found in Figure 4.

The Repeated Measures ANOVA for job satisfaction showed that no significant within-subjects effect was found, F (2.760, 1043.258) = 1.57, p = .20, partial η^2 <.01. Further, the within-subjects contrasts tests did not show any support for a linear, cubic or quadratic relationship. The mean change scores show that employees experienced a statistically significant increase from T0 (M = 7.42, SD = 1.07) to T1 (M = 7.50, SD = 1.07), t (384) = 1.99, p = .024. However, the change from T1(M = 7.50, SD = 1.07) to T2 (M = 7.50, SD = 1.11) was not significant, t (385) = 0.07, p = .471. Neither was the change from T2 (M = 7.50, SD = 1.11) to T3 (M = 7.51, SD = .99), t (382) = 0.39, p = .349. Figure 5 visualizes these changes.

Work ethic showed the reverse effect, with no significant change from T0 (M = 3.34, SD = .61) to T1 (M = 3.33, SD = .64), t (378) = -0.43, p = .334. From T1 (M = 3.33, SD = .64) to T2 (M = 3.39, SD = .62) there was a significant increase in work ethic, t (383) = 2.27, p = .012, and from T2 (M = 3.39, SD = .62) to T3 (M = 3.34, SD = .67) there was a significant decrease in work ethic, t (375) = -1.99, p = .024. While work ethic did not have any significant within-subjects effect, F (3, 1101) = 1.78, p = .149, partial η^2 = .01, the tests of within-subjects contrasts offer support for a cubic relationship, F (1, 367) = 4.27, p = .04. See Figure 6 to visualize the changes of work ethic over the study period.

Hypothesis Testing

To test Hypothesis 1 and 2, a mediated regression analysis was conducted which included work ethic changes from T1 to T2 as the dependent variable, workload changes from

T0 to T1 as the independent variable, job satisfaction changes from T0 to T1 as the mediator and level of education as a covariate. No direct effect between workload changes from T0 to T1 and work ethic changes from T1 to T2 was found, b = -.101, SE = .086, p = .238. The total effect of workload changes from T0 to T1 was nonsignificant on work ethic changes from T1 to T2, b = -.109, SE = .086, p = .216. Hypothesis 1, which stated that a significant increase in workload from T0 to T1 leads to lower work ethic levels between T1 and T2 could not be supported, since no significant direct or total effect was found. There was, however, a positive effect of job satisfaction changes from T0 to T1 to work ethic changes from T1 to T2, b = .081, SE = .035, p = .019. While that is the case, workload changes from T0 to T1 did not predict job satisfaction changes from T0 to T1, b = -.097, SE = .130, p = .459. Hypothesis 2, which stated that as employees' workload increases from T0 to T1, their job satisfaction reduces from T0 to T1 and leads to lower work ethic levels between T1 and T2 could also not be supported, since workload change did not have a significant effect on job satisfaction and the indirect effect of the mediator, job satisfaction was very low *(*b = -.008, *SE* = .017, 95% CI [-.050, .020]).

To test Hypothesis 3, which stated that work ethic at T3 will not be significantly lower than work ethic at T0, I ran a paired samples t-test. The results showed that work ethic at T0 and T3 are positively correlated (r = .71, p = <.001) and that there was no significant difference between the mean work ethic levels at T0 and T3, t (370) = 686, p = .247. Additional t-tests (see Table 12) to compare mean work ethic between the individual time points show that work ethic at T1 is not significantly different to work ethic at T0, that it then significantly increases between T1 and T2 and then decreases between T2 and T3. These results offer support for Hypothesis 3 and show that in the long run, work ethic levels return to baseline.

Post hoc analysis

To follow the dynamic changes over time more closely and test whether any delayed relationship between the study variables was present several post hoc tests were conducted. To test the potential temporal shift of a change in workload and job satisfaction from T1 to T2 causing a decline in work ethic levels from T2 to T3, a further mediated regression analysis using Hayes PROCESS was administered. The results (see Table 11) showed no significant results, and hence it can be concluded that no temporal shift has taken place.

Discussion

Summary of research findings

While research on work ethic suggests that it is a relatively stable attitudinal construct (Arciniega et al., 2019), there are also opposing views that suggest that in the context of a strong event, changes may be possible (Arciniega et al., 2023). At the point of conducting the present study, not much research has been done on the COVID-19 pandemic and its effects on the stability of work ethic (Arciniega et al., 2023). As such, the aim of the present study was to investigate whether the adverse effects on the workplace that were caused by the safety measures implemented to contain the spread of the COVID-19 virus affected employees. Budd (2011) suggests that in one way or another, work can be regarded as the basis of someone's identity. It provides humans with several resources that help form an identity and understand "what it means to be human" (Budd, 2011, 157). As such, work ethic, the attitude that a person has toward work itself (Miller et al., 2002) may determine whether work can positively contribute to a person's identity. Additionally, researchers are in disagreement on whether work ethic is declining or not (Miller et al., 2022). Lower work ethic levels are argued to correspond to several negative work-related outcomes, such as turnover and lower work performance (Miller et al., 2002). It is thus imperative to understand the stability of work ethic better and determine factors that may affect it.

The analysis of the data showed interesting results, and while no support was found for a direct negative effect of workload increase on work ethic, or a mediated effect through job satisfaction, some inferences can be made, nonetheless. Firstly, the results showed the exact opposite of what was hypothesized, namely an average decrease in workload, rather than an increase, and an increase in job satisfaction instead of a decrease. While these changes happened for most people and show an average of the overall sample, individual differences and changes in the opposite direction for some participants may have occurred. T-tests comparing average work ethic levels of full-time employees before the pandemic (2019) and at the end of the pandemic (2022) showed no significant differences. This, paired with additional t-tests comparing work ethic levels between the different time points during the pandemic (2020 and 2021) showed that although there were significant negative and positive changes, in the long run, average work ethic levels went back to baseline levels, thus offering support that the dynamic equilibrium theory (Headey, 2006) may also apply to other attitudes than job satisfaction. Interestingly, work ethic did not significantly change at the onset of the COVID-19 pandemic, but significantly increased from 2021 to 2022, and then significantly decreased again the year after. In the following, I will provide possible alternative explanations for these results and put them into context.

Theoretical Implications

A vital theoretical implication of the current study is that it lends additional support to the notion that work ethic may be susceptible to change, as was found by Arciniega et al. (2023). Besides adding data on a European sample with employees from more than one company, the present study offers additional insights. While support was found that work ethic levels can change over time, it is important to highlight that over time, they do return to baseline levels. This finding is in line with the core idea of dynamic equilibrium theory,

namely that attitudes may change in the short term. However, in the long run, this is not the case.

With the onset of the COVID-19 pandemic in 2020 work changed drastically and overnight for employees and organizations in the Netherlands alike. While the lockdown caused interruptions and a significant reduction in work in some fields (e.g., hospitality), in other fields (e.g., healthcare) the opposite was the case. Researchers refer to this as an intensification of work which may evoke a sense of threat in employees (Scheel et al., 2023). According to a Eurofound report (2022) on working conditions during the pandemic, around half the respondents (49%) in a survey indicated that they worked at high speed, and a further 48% indicated that they had to deal with tight deadlines. Especially at the onset of the pandemic, with novel demands and a need to quickly adapt, I hypothesized that employees would face a significant increase in workload. A trend in workload increase was inferred by a longitudinal study conducted at the onset of the COVID-19 pandemic (Syrek et al., 2022). This effect, however, was not found in the current study. In fact, the opposite was true, and on average there was a decrease in workload. The hypothesized negative effect of an increase in workload from 2019 to 2020 on the level of work ethic from 2020 to 2021 was not observed. It appears that there is thus no relationship between workload changes and changes in work ethic.

While no direct effect between workload changes and work ethic changes was found, there was support for an effect of job satisfaction on work ethic, namely an indirect effect of job satisfaction changes between 2019 and 2020 on work ethic level changes between 2020 and 2021. In this case, both job satisfaction and work ethic changed significantly between time points. These results indicate that an increase in job satisfaction has a positive effect on work ethic. Since both variables reflect the attitude toward work, researchers suggest that they are closely connected (Grabowski et al., 2021; Miller et al., 2002) and share the underlying

factor of work motivation. A high work ethic may be reflected in increased motivation to work hard. Similarly, job satisfaction has been shown to positively affect job performance (Montuori et al., 2022). While motivation and job performance were not measured in the present study, and hence no inferences can be made about these relationships, the observed relationship between job satisfaction and work ethic adds an interesting perspective to our existing knowledge.

Practical Implications

Although significant changes in workload, job satisfaction, and work ethic were found between one or several time points it is crucial to point out that although statistically significant, the average changes were rather small in practice. This means that while on average, the employees in the sample experienced changes, these changes were small and for some people, it is likely that they were barely noticeable in reality.

While this may be the case, the findings do support the notion that in the context of a strong event such as the COVID-19 pandemic, employees experienced subjective changes in the workplace. As Scheel and colleagues (2023) suggested, parts of the population did not experience an intensification of their work, which means that finding an initial decrease in workload in the current study was not out of the ordinary. Higher job demands and stressors, such as a high workload, are associated with worse well-being (Meier et al., 2023), including lower job satisfaction. With the observed decrease in workload and increase in job satisfaction from 2019 to 2020 it is hence not surprising to find an increase in workload from 2020 to 2021.

One possible explanation for this effect is that with a decreased workload, employees may be able to dedicate more time to other life domains. Conservation of Resources theory (COR; Hobfoll, 1989) posits that people are motivated to acquire and protect personal resources. One such resource which may have been threatened is work-life balance. Research

conducted at the onset of the COVID-19 pandemic suggests that managing the boundaries between life domains and serving several different roles at once was perceived as challenging (Syrek et al., 2022). Bowling and Kirkendall further posit that the acquisition of new resources may not be possible when dealing with an excessive workload (2012) With a decrease in workload, it may be that more time was available to protect resources such as a healthy work-life balance and dedicating enough time to other roles to not experience a decrease in well-being. From a practical standpoint, this forms a valuable basis for employers and policymakers. If a lower workload positively affects job satisfaction, working conditions could be tailored to keep this in mind. High job satisfaction is associated with overall life quality and affects work performance, absenteeism, and turnover (Montuori et al., 2022).

What is more, there appears to be a relationship between increases in job satisfaction and positive increases in work ethic, which may indicate that being satisfied with one's current job may have positive effects on how much one values work in itself. Grabowski and colleagues (2021) posit that from a self-determination theory perspective, as put forward by Deci and Ryan, work ethic in itself is connected to work motivation, potentially leading to positive work outcomes. Woehr and colleagues (2023) argue that "work ethic is a robust predictor of work-related outcomes" (p. 2). As such, strengthening employee work ethic may be vital and lead to positive benefits for employees and employers alike.

Strengths, Limitations, and Future Research Implications

One strength of this study is that it adds valuable longitudinal results to the existing literature on the stability of work ethic, as well as the temporal precedence of changes over an extended period of time. Additionally, this study adds to research on the effects and consequences of strong events, such as the COVID-19 pandemic.

As mentioned in the method section, the weak reliability of the scales that were used is a limitation that needs to be addressed. The obtained results can still provide insights into the

temporal changes in attitudes but should be interpreted cautiously, keeping in mind the statistical limitations. Since this study was conducted after the COVID-19 pandemic, it was only possible to make use of archival data, rather than designing a study with all necessary materials and assure the reliability and validity of all scales. This means that a questionnaire such as the one used in the LISS core studies, which measures a variety of different concepts, may be reliable overall, but the individual items may vary and have a less desirable reliability. Since no study existed that investigated the dynamic changes in work ethic and utilized data from the LISS panel, a reliability check of the scales before the data analysis was not possible. Additionally, the items that were utilized to measure workload changes as a variable were part of the overarching category 'working conditions'. As such, specific items that reflected the different components of workload were picked. Since only a few items instead of the whole existing scale were used, reliability was also an issue here. Furthermore, perceived workload was measured on a three-point Likert scale (1 = never, 2 = sometimes, 3 = often) which does not allow for much variability in the scores. From a content perspective, workload could have been better operationalized. Workload encompasses many different dimensions, including quality, quantity, and physical and mental aspects, and can be measured both objectively and subjectively (Bowling et al., 2005). Utilizing only four items may not sufficiently assess workload, with all its subdimensions. Further, no objective measure of workload was used, making scores highly subjective and vulnerable to biases.

Future research would benefit from more reliable scales that provide more accurate and valid measurements. Additionally, this study used rather long time lags of one year between measurement points. Using time points that are closer together would enable better estimates of short-term and long-term changes and a much clearer picture of how work ethic levels change over time. The observed relationship between job satisfaction and work ethic additionally warrants further research. Firstly, to gain more clarity on how exactly job

satisfaction affects work ethic. It would also be interesting to research whether work ethic positively affects job satisfaction. Additionally, to understand which factors may contribute to a higher work ethic qualitative studies could be a valuable starting point.

Conclusion

The present study offers valuable insight into the effects of the COVID-19 pandemic with regard to dynamic changes in the workplace. The results highlight that as existing research suggested (Arciniega et al., 2023) work ethic, though believed to be a stable construct, is in fact susceptible to change under certain conditions. The COVID-19 pandemic appears to be one such condition. While this study did not offer an explanation for the exact mechanisms of said change, it opens the door to new research avenues and once more stresses the need for more research on the concept of work ethic.

References

Albarracin, D., & Shavitt, S. (2018). Attitudes and attitude change. *Annual Review of Psychology*, *69*(1), 299–327. https://doi.org/10.1146/annurev-psych-122216-011911

Arciniega, L. M., Woehr, D. J., & Del Rincón, G. A. (2019). Examining regional variability in work ethic within Mexico: individual difference or shared value. *International Journal of Psychology*, *54*(4), 431–438. https://doi.org/10.1002/ijop.12480

Arciniega, L. M., Woehr, D. J., & González, L. F. (2023). Leading a post-pandemic workforce: Understanding employees' changing work ethic. *BRQ Business Research Quarterly*. https://doi.org/10.1177/23409444231208725

Baert, S., Lippens, L., Moens, E., Sterkens, P., & Weytjens, J. (2020). How do we think the COVID-19 crisis will affect our careers (If any remain)? *Social Science Research Network*. https://doi.org/10.2139/ssrn.3584927

Baker, W. K. (2004). Antecedents and consequences of job satisfaction: Testing a comprehensive model using integrated methodology. *Journal of Applied Business Research (JABR)*, *20*(3). https://doi.org/10.19030/jabr.v20i3.2212

Blood, M. R. (1969). Work values and job satisfaction. *Journal of Applied Psychology*, *53*(6), 456–459. https://doi.org/10.1037/h0028653

Bowling, N. A., Beehr, T. A., Wagner, S. H., & Libkuman, T. M. (2005). Adaptation-level theory, opponent process theory, and dispositions: An integrated approach to the stability of job satisfaction. *Journal of Applied Psychology*, *90*(6), 1044–1053. https://doi.org/10.1037/0021-9010.90.6.1044

Bowling, N. A., & Kirkendall, C. (2012). Workload: A review of causes, consequences, and potential interventions. *Contemporary Occupational Health Psychology: Global Perspectives on Research and Practice, Volume 2*, *2*, 221-238. https://doi.org/10.1002/9781119942849.ch13

Budd, J. W. (2011). *The Thought of Work*. Ithaca, NY: Cornell University Press https://doi.org/10.7591/9780801462658

Cain, B. (2007). A review of the mental workload literature. *DTIC Document*. https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=7367184a149e20107188cbaaf034fcd3c3b241ea

Champoux, J. E. (1978). A serendipitous field experiment in job design. *Journal of Vocational Behavior*, *12*(E), 364–9. https://doi.org/10.1016/0001-8791(78)90024-6

DiStaso, M., Horan, K., LeNoble, C., Shoss, M., Politis, Z., & Azcarate, I. (2022). The impact of workload, workload changes, and anticipated workload changes during COVID-19 on worker well-being. *Crisis, Chaos and Organizations: The Coronavirus and Lessons for Organizational Theory*, 33-64.

Eurofound (2011, September 20). *Working conditions*, European Industrial Relations Dictionary, Dublin. Retrieved February 10, 2024, from https://www.eurofound.europa.eu/en/european-industrial-relations-dictionary/working-conditions

Eurofound (2022, November 29). *Working conditions in the time of COVID-19: Implications for the future*, European Working Conditions Telephone Survey 2021 series, Publications Office of the European Union, Luxembourg. Retrieved February 10, 2024, from https://www.eurofound.europa.eu/en/publications/2022/working-conditions-time-covid-19-implications-future

Furnham, A. (1984). The protestant work ethic: A review of the psychological literature. *European Journal of Social Psychology*, *14*(1), 87–104. https://doi.org/10.1002/ejsp.2420140108

Grabowski, D., Chudzicka-Czupała, A., & Stąpor, K. (2021). Relationships between work ethic and motivation to work from the point of view of the self-determination theory. *PLOS ONE*, *16*(7), e0253145. https://doi.org/10.1371/journal.pone.0253145

Griffin, R. W. (1991). Research notes. effects of work redesign on employee perceptions, attitudes, and behaviors: a long-term investigation. *Academy of Management Journal*, *34*(2), 425–435. https://doi.org/10.5465/256449

Headey, B. (2006). Subjective well-being: Revisions to dynamic equilibrium theory using national panel data and panel regression methods. *Social Indicators Research*, *79*(3), 369–403. https://doi.org/10.1007/s11205-005-5381-2

Hernández-Linares, R., López-Fernández, M. C., Kellermanns, F. W., & Cunha, M. P. E. (2024). Leadership in special contexts: Introduction to the special issue. *BRQ Business Research Quarterly*. https://doi.org/10.1177/23409444231222502

Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*, *44*(3), 513–524. https://doi.org/10.1037/0003-066x.44.3.513

Humphrey, S. E., Nahrgang, J. D., & Morgeson, F. P. (2007). Integrating motivational, social, and contextual work design features: A meta-analytic summary and theoretical extension of the work design literature. *Journal of Applied Psychology*, *92*(5), 1332–1356. https://doi.org/10.1037/0021-9010.92.5.1332

Kramer, A., & Kramer, K. Z. (2020). The potential impact of the Covid-19 pandemic on occupational status, work from home, and occupational mobility. *Journal of Vocational Behavior*, *119*, 103442. https://doi.org/10.1016/j.jvb.2020.103442

Le, K., Donnellan, M. B., & Conger, R. D. (2013). Personality development at work: workplace conditions, personality changes, and the corresponsive principle. *Journal of Personality*, *82*(1), 44–56. https://doi.org/10.1111/jopy.12032

Locke, E. A. (1969). What is job satisfaction? *Organizational Behavior and Human Performance*, *4*(4), 309–336. https://doi.org/10.1016/0030-5073(69)90013-0

McFarland, L. A., Reeves, S., Porr, W. B., & Ployhart, R. E. (2020). Impact of the COVID-19 pandemic on job search behavior: An event transition perspective. *Journal of Applied Psychology*, *105*(11), 1207–1217. https://doi.org/10.1037/apl0000782

Meier, L. L., Keller, A. C., Reis, D., & Nohe, C. (2023). On the asymmetry of losses and gains: Implications of changing work conditions for well-being. *The Journal of Applied Psychology*, *108*(8), 1408–1424. https://doi.org/10.1037/apl0001080

Meriac, J. P., Thomas, A. L., & Milunski, M. (2014). Work ethic as a predictor of task persistence and intensity. *Learning and Individual Differences*, *37*, 249–254. https://doi.org/10.1016/j.lindif.2014.11.006

Miller, M. J., Woehr, D. J., & Hudspeth, N. (2002). The meaning and measurement of work ethic: Construction and initial validation of a multidimensional inventory. *Journal of Vocational Behavior*, *60*(3), 451–489. https://doi.org/10.1006/jvbe.2001.1838

Montuori, P., Sorrentino, M., Sarnacchiaro, P., Di Duca, F., Nardo, A., Ferrante, B., D'Angelo, D., Di Sarno, S., Pennino, F., Masucci, A., Triassi, M., & Nardone, A. (2022). Job satisfaction: knowledge, attitudes, and practices analysis in a well-educated population. *International Journal of Environmental Research and Public Health*, *19*(21). https://doi.org/10.3390/ijerph192114214

Pickens, J. (2005). Attitudes and perceptions. *Organizational behavior in health care*, *4*(7), 43-76.

Scheel, T., Bendixen, L., Procházka, J., & Maran, D. A. (2023). Working during the COVID-19 pandemic: Demands, resources, and mental wellbeing. *Frontiers in Psychology*, *13*. https://doi.org/10.3389/fpsyg.2022.1037866

Scherpenzeel, A.C., & Das, M. (2010). “True” longitudinal and probability-based internet panels: evidence from the Netherlands. In Das, M., P. Ester, and L. Kaczmirek (Eds.), *Social and Behavioral Research and the Internet: Advances in Applied Methods and Research Strategies*. (pp. 77-104). Boca Raton: Taylor & Francis. https://doi.org/10.4324/9780203844922-4

Specht, J., Bleidorn, W., Denissen, J. J. A., Hennecke, M., Hutteman, R., Kandler, C., Luhmann, M., Orth, U., Reitz, A. K., & Zimmermann, J. (2014). What drives adult personality development? A comparison of theoretical perspectives and empirical evidence. *European Journal of Personality*, *28*(3), 216-230. https://doi.org/10.1002/per.1966

Syrek, C. J., Kühnel, J., Vahle-Hinz, T., & De Bloom, J. (2021). Being an accountant, cook, entertainer and teacher—All at the same time: Changes in employees’ work and work-related well-being during the coronavirus (COVID-19) pandemic. *International Journal of Psychology*, *57*(1), 20–32. https://doi.org/10.1002/ijop.12761

Van Ruysseveldt, J., Van Dam, K., Verboon, P., & Roberts, A. (2022). Job characteristics, job attitudes and employee withdrawal behaviour: A latent change score approach. *Applied Psychology*, *72*(4), 1449–1477. https://doi.org/10.1111/apps.12448

Williams, K. J., Suls, J., Alliger, G. M., Learner, S. M., & Wan, C. K. (1991). Multiple role juggling and daily mood states in working mothers: An experience sampling study.*Journal of Applied Psychology, 76*(5), 664–674. https://doi.org/10.1037/0021-9010.76.5.664

Woehr, D. J., Arciniega, L. M., González, L., & Stanley, L. J. (2023). Live to work, work to live, and work as a necessary evil: an examination of the structure and stability of work ethic profiles. *Group & Organization Management, (20230106)*. https://doi.org/10.1177/10596011221146363

Table 1

Gender, Age, Level of Education, and Origin of Participants

	n	%
Gender		
Male	285	73.3
Female	104	26.7
Age		
15 – 24 years	12	3.1
25 – 34 years	62	15.9
35 – 44 years	79	20.3
45 – 54 years	139	35.7
55 – 64 years	96	24.7
65 years and older	1	0.3
Level of education		
Primary school	6	1.5
VMBO (Intermediate Secondary Education, US: Junior High School)	50	12.9
HAVO/VWO (Higher Secondary Education/Preparatory Education, US: Senior High School)	28	7.2
MBO (Intermediate Vocational Education, US: Junior College)	107	27.5
HBO (Higher Vocational Education, US: College)	124	31.9
WO (University)	73	18.8
Missing	1	0.3
Origin		
Dutch Background	318	81.7
First Generation Foreign, Western Background	15	3.9
First Generation Foreign, Non-Western Background	17	4.4
Second Generation Foreign, Western Background	19	4.9
Second Generation Foreign, Non-Western Background	14	3.6
Missing	6	1.5

Note. $N = 389$.

Table 2

Field of Work of Participants

Time point	T0		T1		T2		T3	
	n	%	n	%	n	%	n	%
Field of work								
Agriculture, forestry, fishery, hunting	6	1.5	6	1.5	6	1.5	5	1.3
Industrial production	65	16.7	65	16.7	65	16.7	67	17.2
Utilities production	3	.8	4	1.0	4	1.0	4	1.0
Construction	20	5.1	19	4.9	20	5.1	21	5.4
Retail trade	29	7.5	28	7.2	28	7.2	27	6.9
Catering	4	1.0	4	1.0	3	.8	3	.8
Transport, storage, and communication	32	8.2	33	8.5	33	8.5	33	8.5
Financial	23	5.9	24	6.2	23	5.9	22	5.7
Business Services	36	9.3	37	9.5	37	9.5	35	9.0
Government Services	53	13.6	55	14.1	54	13.9	56	14.4
Education	29	7.5	28	7.2	28	7.2	28	7.2
Healthcare and welfare	33	8.5	32	8.2	33	8.5	33	8.5
Environmental services	13	3.3	14	3.6	12	3.1	12	3.1
Other	40	10.3	33	8.5	36	9.3	32	8.2
Missing	3	.8	7	1.8	7	1.8	11	2.8

Note. $N = 389$.

Table 3

Correlations between Demographic Variables and Workload at all Time Points and Change Scores between Time Points

Variable	*M*	*SD*	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Age	45.58	10.27									
2. Level of education	.51	.50	-.13**								
3. Gender	1.27	.44	-.19**	.16**							
4. Workload T0	2.45	.37	.09	.06	.01						
5. Workload T1	2.40	.36	-.02	.10	.04	.62**					
6. Workload T2	2.41	.36	.00	.14**	.03	.60**	.65**				
7. Workload T3	2.41	.34	.00	.11*	-.03	.54**	.61**	.67**			
8. Change score workload T0 – T1	-.05	.32	-.13*	.03	.04	-.45**	.42**	.05	.08		
9. Change score workload T1 – T2	.02	.31	.02	.08	-.02	-.04	-.42**	.42**	.05	-.44**	
10. Change score workload T2 – T3	.00	.29	.01	-.06	-.06	-.12*	-.09	-.48**	.33**	.03	-.47**

Note. N between 377 and 389. Workload scores are measured on a scale from 1 to 3.

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 4

Correlations between Demographic Variables and Job Satisfaction at all Time Points and Change Scores between Time Points

Variable	*M*	*SD*	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Age	45.58	10.27									
2. Level of education	.51	.50	-.13**								
3. Gender	1.27	.44	-.19**	.16**							
4. Job satisfaction T0	7.42	1.07	-.01	.16*	.09						
5. Job satisfaction T1	7.50	1.07	.02	.13*	.12*	.76**					
6. Job satisfaction T2	7.50	1.11	.04	.14**	.06	.65**	.69**				
7. Job satisfaction T3	7.51	.99	.04	.13*	.05	.58**	.59**	.71**			
8. Change score job satisfaction T0 – T1	.08	.74	.03	.01	.05	-.36**	.34**	.05	<.00		
9. Change score job satisfaction T1 – T2	.00	.86	.03	.01	-.07	-.10	-.35**	.43**	.19**	-.36**	
10. Change score job satisfaction T2 – T3	.02	.81	-.01	-.04	-.04	-.19**	-.23**	-.51**	.25**	-.08	-.37**

Note. N between 377 and 389. Job Satisfaction scores are measured on a scale from 1 to 10.

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 5

Correlations between Demographic Variables and Work Ethic at all Time Points and Change Scores between Time Points

Variable	*M*	*SD*	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Age	45.58	10.47									
2. Level of education	.51	.60	-.13**								
3. Gender	1.27	.44	-.19**	.16**							
4. Work ethic T0	3.34	.61	-.05	.11*	.05						
5. Work ethic T1	3.33	.64	-.07	.10	.04	.67**					
6. Work ethic T2	3.39	.62	-.06	.04	.01	.66**	.68**				
7. Work ethic T3	3.34	.67	-.10	.11*	.03	.71**	.73**	.74**			
8. Change score work ethic T0 – T1	<.01	.51	-.02	-.01	-.02	-.37**	.45**	.04	.07		
9. Change score work ethic T1 – T2	.06	.50	.02	-.08	-.04	-.01	-.42**	.37**	-.02	-.51**	
10. Change score work ethic T2 – T3	-.05	.47	-.06	.09	.03	.11*	.14**	-.27**	.45**	.05	-.52**

Note. N between 377 and 389. Work ethic scores are measured on a scale from 1 to 5.

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 6

Correlations between all Study Variables at all Time Points and Change Scores of all Study Variables between Time Points

Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1. Workload T0												
2. Workload T1	.62**											
3. Workload T2	.59**	.65**										
4. Workload T3	.53**	.61**	.67**									
5. Job satisfaction T0	-.02	-.11*	-.08	-.08								
6. Job satisfaction T1	.02	-.12*	-.08	-.10	.76**							
7. Job satisfaction T2	-.04	-.14**	-.09	-.13*	.65**	.69**						
8. Job satisfaction T3	-.09	-.18**	-12*	-.19**	.58**	.59**	.71**					
9. Work ethic T0	.11*	.01	.08	.09	.14**	.08	.08	.07				
10. Work ethic T1	.07	.03	.11*	.10*	.13*	.09	.13*	.10*	.67**			
11. Work ethic T2	.12*	.04	.06	.13*	.11*	.13**	.16**	.11*	.66**	.68**		
12. Work ethic T3	.15**	.07	.12*	.14**	.11*	.10	.10	.12*	.71**	.73**	.74**	
13. Change WL T0-T1	-.45**	.42**	.05	.08	-.10	-.15**	-.10*	-.10*	-.10	-.05	-.09	-.10
14. Change WL T1-T2	-.04	-.42**	.42**	.05	.03	.05	.03	.07	.07	.08	.01	.07
15. Change WL T2-T3	-.12*	.09	-.48**	.33**	-.01	-.04	-.04	-.07	.01	-.02	.07	.00
16. Change JS T0-T1	.04	.01	.01	-.01	-.36**	.34**	.05	<.00	-.09	-.07	.03	<.00
17. Change JS T1-T2	-.08	-.03	-.03	-.05	-.10	-.35**	.43**	.19**	-.01	.06	.04	.01
18. Change JS T2-T3	-.04	-.02	-.01	-.04	-.20**	-.23**	-.51**	-.25**	-.01	-.05	-.09	.01
19. Change WE T0-T1	-.04	.02	.05	.02	-.01	.01	.05	.03	.37**	.45**	.04	.07
20. Change WE T1-T2	.05	.00	-.07	.02	-.03	.05	.05	.00	-.01	-.42**	.37**	-.02
21. Change WE T2-T3	.06	.04	.09	.02	.00	-.03	-.08	.02	.11*	.14**	-.27**	.45**

Note. N between 377 and 389. Abbreviations used: workload (WL), job satisfaction (JS), and work ethic (WE).

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 7

Correlations of Change Scores of all Study Variables between Time Points

Variable	13.	14.	15.	16.	17.	18.	19.	20.
13. Change WL T0-T1								
14. Change WL T1-T2	-.44**							
15. Change WL T2-T3	.03	-.47**						
16. Change JS T0-T1	-.04	.01	-.03					
17. Change JS T1-T2	.06	-.02	<.00	-.36**				
18. Change JS T2-T3	.01	.02	-.03	-.08	-.37**			
19. Change WE T0-T1	.07	.02	-.04	.04	.06	-.05		
20. Change WE T1-T2	-.06	-.07	.11*	.12*	<.00	-.05	-.51**	
21. Change WE T2-T3	-.02	.07	-.08	-.04	-.07	.13*	-05	-.52**

Note. N between 377 and 389. Abbreviations used: workload (WL), job satisfaction (JS), and work ethic (WE).

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 8

Tests of Within-Subjects Effects of all Study Variables

		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Workload	Sphericity Assumed	.641	3	.214	4.23	.005	.011
	Greenhouse-Geisser	.641	2.908	.220	4.23	.006	.011
	Huynh-Feldt	.641	2.934	.218	4.23	.006	.011
	Lower-bound	.641	1.000	.641	4.23	.040	.011
Error (Workload)	Sphericity Assumed	55.093	1092	.050			
	Greenhouse-Geisser	55.093	1058.611	.052			
	Huynh-Feldt	55.093	1068.053	.052			
	Lower-bound	55.093	364	.151			
Job Satisfaction	Sphericity Assumed	1.793	3	.598	1.57	.196	.004
	Greenhouse-Geisser	1.793	2.738	.655	1.57	.200	.004
	Huynh-Feldt	1.793	2.760	.650	1.57	.200	.004
	Lower-bound	1.793	1	1.793	1.57	.212	.004
Error (Job satisfaction)	Sphericity Assumed	432.789	1134	.382			
	Greenhouse-Geisser	432.789	1034.963	.418			
	Huynh-Feldt	432.789	1043.258	.415			
	Lower-bound	432.789	378	1.145			
Work Ethic	Sphericity Assumed	.646	3	.215	1.78	.149	.005
	Greenhouse-Geisser	.646	2.987	.216	1.78	.149	.005
	Huynh-Feldt	.646	3	.215	1.78	.149	.005
	Lower-bound	.646	1	.646	1.78	.149	.005
Error (Work ethic)	Sphericity Assumed	133.026	1101	.121			
	Greenhouse-Geisser	133.026	1096.58	.121			
	Huynh-Feldt	133.026	1101	.121			
	Lower-bound	133.026	367	.362			

Note. $N = 389$.

Table 9

Tests of Within-Subjects Contrasts of all Study Variables

		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Workload	Linear	.180	1	.180	2.96	.086	.008
	Quadratic	.281	1	.281	6.18	.013*	.017
	Cubic	.180	1	.180	4.00	.046*	.011
Job Satisfaction	Linear	1.298	1	1.298	2.51	.114	.007
	Quadratic	.305	1	.305	.93	.335	.002
	Cubic	.190	1	.190	.63	.428	.002
Work Ethic	Linear	.001	1	.001	.01	.940	.000
	Quadratic	.102	1	.102	.89	.347	.002
	Cubic	.544	1	.544	4.27	.040*	.011

*. Correlation is significant at the 0.05 level (2-tailed).

Table 10

Results of Mediated Regression Analysis

Effect			Estimate	*SE*	95% Confidence Interval		*p*
					Lower	Upper	
Indirect			-.008	.017	-.050	.020	
Direct			-.101	.086	-.269	.067	.238
Total			-.109	.086	-.278	.060	.206

Model		R Squared	Estimate	*SE*	95% Confidence Interval		*p*
					Lower	Upper	
1[a]		.002					.735
	Constant		.058	.058	-.055	.172	.313
	Workload change T0 -T1		-.097	.130	-.353	.160	.459
	Level of education		.023	.080	-.133	.180	.771
2[b]		.026					.022*
	Constant		.089	.038	.014	.164	.020*
	Workload change T0 -T1		-.101	.086	-.269	.067	.238
	Job satisfaction change T0-T1		.081	.035	.013	.149	.019*
	Level of education		-.083	.052	-.186	.020	.112
3[b]		.011					.125
	Constant		.094	.038	.020	.169	.014*
	Workload change T0 -T1		-.109	.086	-.278	.060	.206
	Level of education		-.082	.053	-.185	.022	.123

a. Dependent Variable: Job satisfaction change T0-T1

b. Dependent Variable: Work ethic change T1-T2

*. Correlation is significant at the 0.05 level (2-tailed).

Table 11

Results of Post Hoc Mediated Regression Analysis

Effect			Estimate	*SE*	95% Confidence Interval		*p*
					Lower	Upper	
Indirect			.001	.011	-.021	.027	
Direct			.108	.083	-.056	.271	.195
Total			.109	.083	-.055	.272	.191
Model		R Squared	Estimate	*SE*	95% Confidence Interval		*p*
					Lower	Upper	
1[a]		.0010					.833
	Constant		-.031	.061	-.151	.088	.608
	Workload change T1 -T2		-.027	.140	-.302	.248	.845
	Level of education		.049	.084	-.116	.215	.559
2[b]		.0161					.122
	Constant		-.090	.036	-.161	-.019	.014*
	Workload change T1 -T2		.109	.083	-.056	.271	.195
	Job satisfaction change T1-T2		-.041	.031	-.102	.021	.197
	Level of education		.075	.050	-.023	.174	.134
3[b]		.0115					.127
	Constant		-.088	.036	-.159	-.017	.015*
	Workload change T1 -T2		.109	.083	-.055	.272	.191
	Level of education		.073	.050	-.025	.172	.145

a. Dependent Variable: Job satisfaction change T1-T2

b. Dependent Variable: Work ethic change T2-T3

*. Correlation is significant at the 0.05 level (2-tailed).

Table 12

Paired t-tests for all Study Variables

			95% Confidence Interval				
Pair	Mean	*SD*	Lower	Upper	t	df	*One-Sided p*
Workload T1 - T0	-.053	.324	-.086	-.020	-3.15	374	<.001*
Workload T2 - T1	.016	.306	-.015	.047	1.01	375	.156
Workload T3 - T2	-.003	.289	-.031	.028	-.09	373	.464
Job satisfaction T1 - T0	.076	.748	.001	.151	1.99	384	.024*
Job satisfaction T2 - T1	.003	.044	-.083	.090	.07	385	.471
Job satisfaction T3 - T2	.016	.041	-.065	.097	.39	382	.349
Work ethic T1 - T0	-.011	.510	-.063	.040	-.43	378	.334
Work ethic T2 - T1	.058	.026	.008	.108	2.27	383	.012*
Work ethic T3 - T2	-.049	.024	-.097	-.005	-1.99	375	.024*

*. Correlation is significant at the 0.05 level (2-tailed).

Appendix

Figure 1

Histogram Assumption Check Normal Distribution

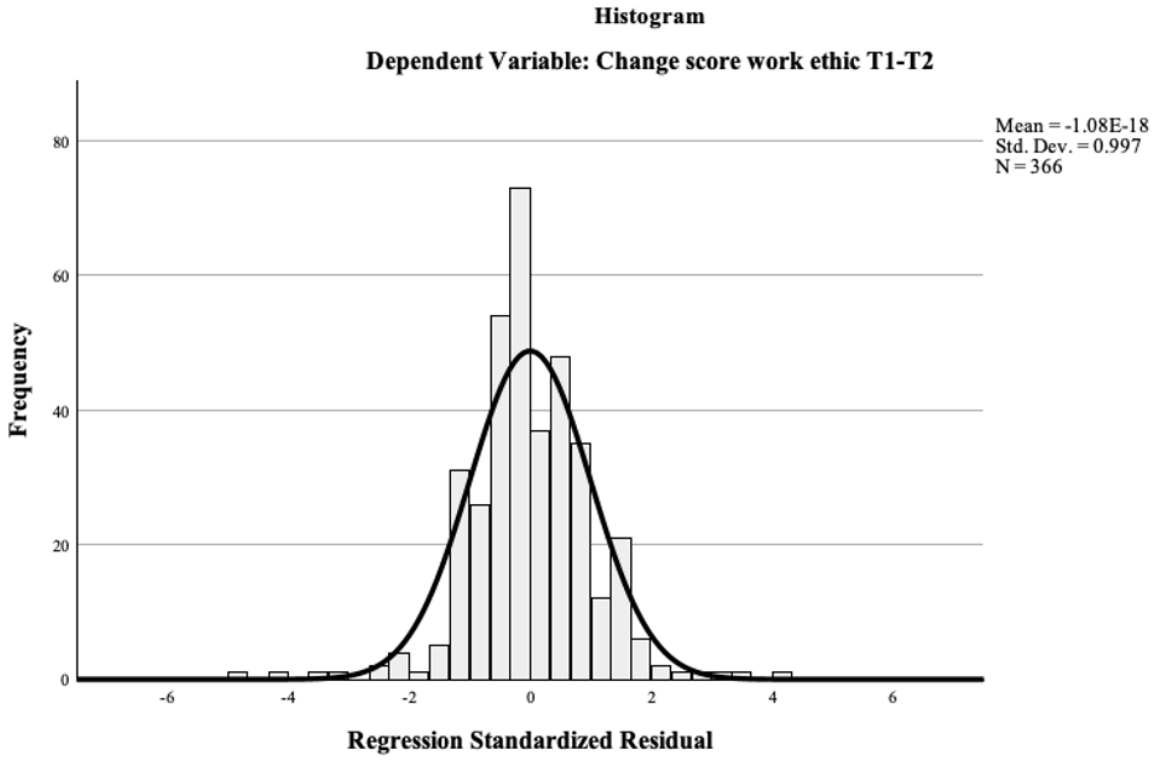

Figure 2

Scatterplot Assumption Check Homoscedasticity

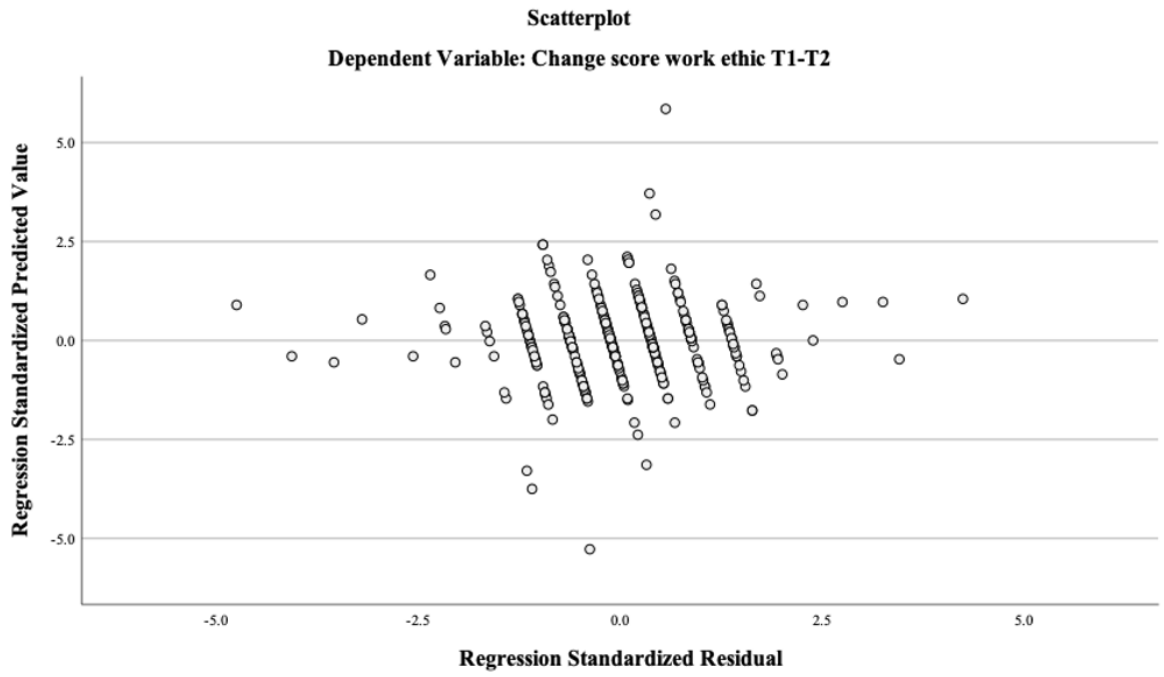

Figure 3

P-P Plot Assumption Check Normality

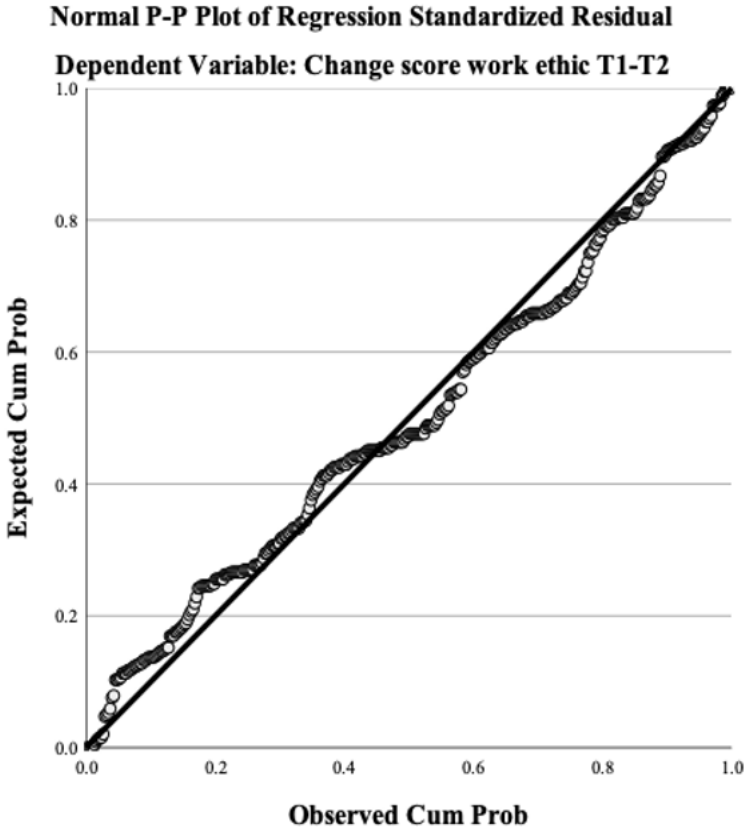

Figure 4

Repeated Measures Analysis of Variance Plot Workload

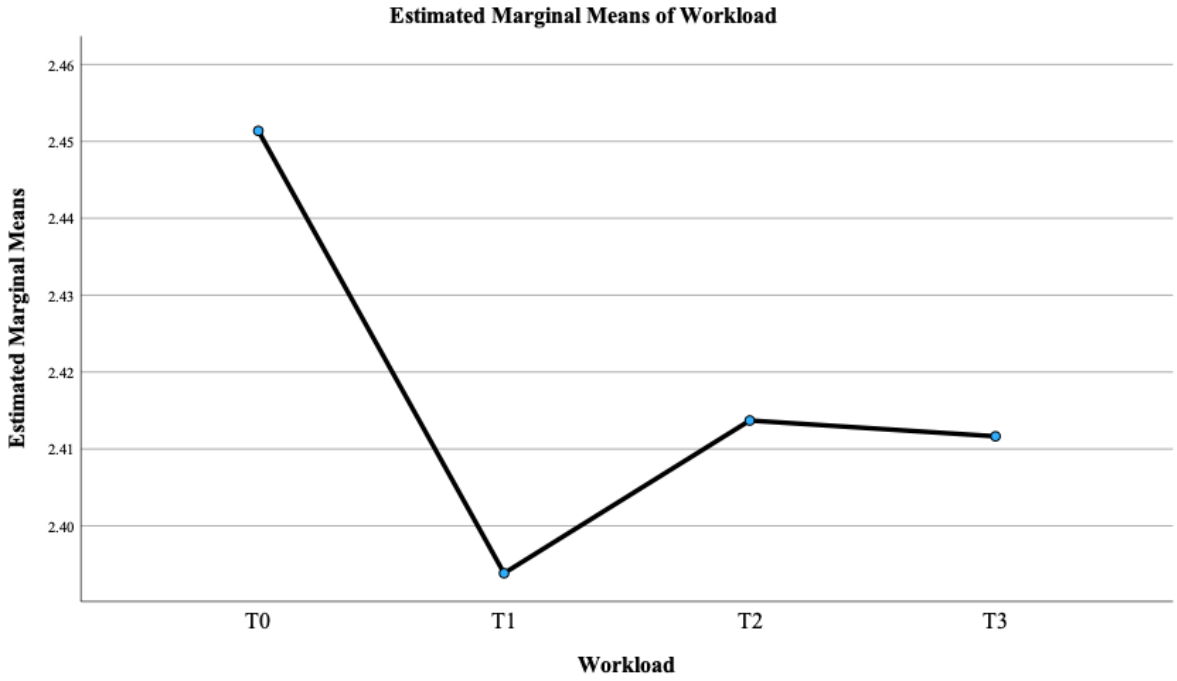

Figure 5

Repeated Measures Analysis of Variance Plot Job satisfaction

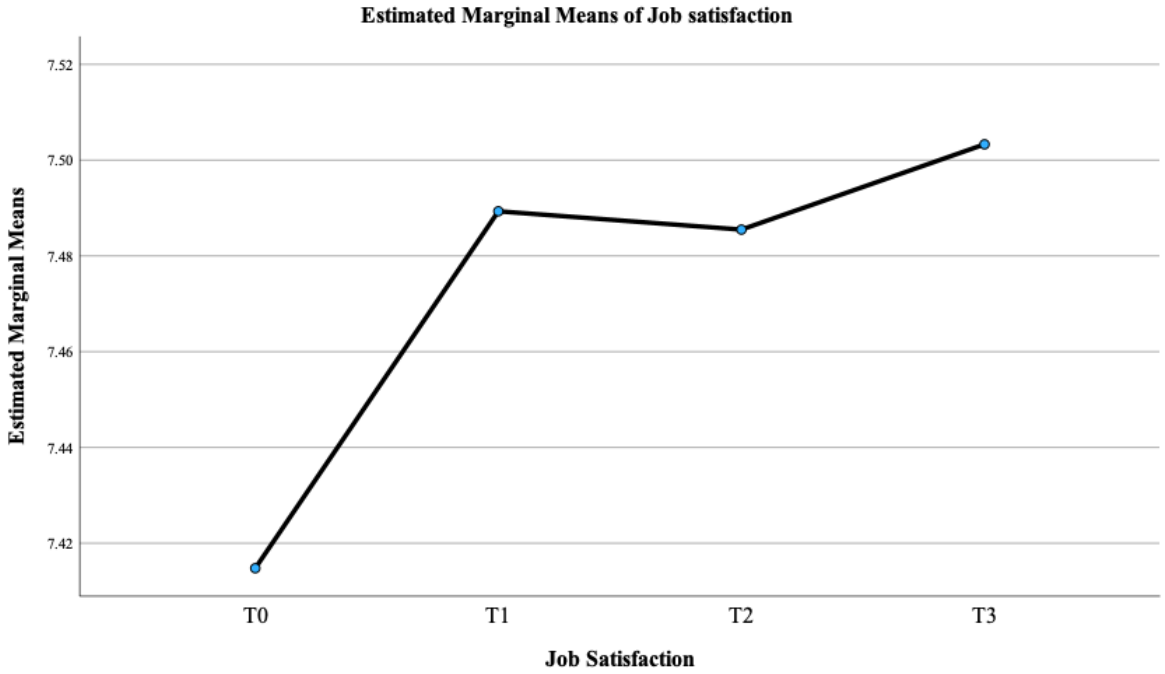

Figure 6

Repeated Measures Analysis of Variance Plot Work ethic