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# Relationship between Care and Repair in the Work Environment

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**Abstract**
This study analyzes the relationship between **Care** and **Repair** in the workplace, exploring how the ability to concentrate and the cognitive effort to correct errors can be linked to employee performance. From a theoretical approach, models of cognitive processing, regulation of mental effort and self-control in the execution of tasks are considered. It is hypothesized that an increase in repair capacity is associated with a higher level of attention at work, suggesting that employees who devote more effort to correcting errors may develop a greater ability to maintain their concentration.
To evaluate this relationship, a quantitative design based on econometric techniques was used. The estimated simple linear regression model shows that the coefficient of the Repair variable is positive and significant ($p<0.001p < 0.001$), indicating that employees with high levels of repair tend to show greater attention in their activities. In addition, the model meets the fundamental assumptions of regression, including tests of specification, linearity, and absence of autocorrelation. The findings suggest that **the ability to repair errors can positively influence work care**, which has implications for the design of organizational strategies for performance optimization. It is recommended that future research expand the analysis by incorporating mediating variables, such as cognitive load and mental fatigue, for a deeper understanding of the relationship between care and repair.
**Keywords:** Attention, repair, work performance, cognitive regulation, self-control.

## Introduction

### Context and Problem Statement

In the workplace, **attention and repair** are two essential cognitive skills that influence efficiency and accuracy in the execution of tasks. Attention allows employees to keep their focus on relevant information, reducing the interference of distractions, while repair refers to the ability to detect, correct errors, and adjust strategies in work performance (Reason, 1990). Both competencies are fundamental in scenarios where cognitive demand is high and decision-making is critical for organizational productivity (Norman & Shallice, 1986).
The literature on job performance suggests that error repair may be directly related to the ability to sustain attention, given that monitoring and correction processes require continuous activation of **working memory and executive control** (Miyake et al., 2000). Workers who develop effective repair strategies can strengthen their ability to concentrate through the optimization of cognitive processing (Botvinick et al., 2001). However, the relationship between care and reparation has been little explored from a quantitative perspective in work contexts.
From an organizational perspective, understanding this relationship is key to designing strategies that improve work performance and reduce cognitive fatigue. Therefore, this

study seeks to answer the following research question: **To what extent does the capacity for repair influence attention at work?** To this end, a quantitative approach based on simple linear regression is used to evaluate this relationship in a sample of employees.

**Theoretical Approaches**

The analysis of the relationship between **attention and repair** is based on various theories of **cognition, the regulation of mental effort and the optimization of performance**. Attention is a cognitive process that allows us **to filter, select and focus mental resources** on relevant information, while repair refers to the ability to **adjust and correct errors** in performance. The interdependence between these variables lies in the fact that a greater ability to detect and correct errors facilitates the maintenance of attention in critical tasks, thus optimizing the management of cognitive resources and improving performance stability. In this sense, different theoretical models explain how repair can act as an attentional regulation mechanism, facilitating greater efficiency in the execution of tasks.

**Selective Attention Theory (Posner & Petersen, 1990)**

According to Posner and Petersen's (1990) **Theory of Selective Attention**, attention is a **complex cognitive system composed of three interdependent mechanisms**: (1) the alert system, which regulates the state of vigilance and readiness to respond to stimuli;
(2) the guidance system, which facilitates the focus on relevant information; and (3) the executive control system, which allows for the regulation of attention and inhibition of distractors. Repair capacity could influence selective attention by strengthening **error monitoring and the realignment of cognitive resources** towards priority tasks (**Fan et al., 2002**).

From this perspective, employees with a greater capacity for repair can **redirect their attention more efficiently**, minimizing interference from previous mistakes and optimizing the allocation of cognitive resources to tasks of greater relevance. Selective attention allows individuals to focus their efforts on essential aspects of the work, while repair facilitates the correction of mismatches in execution, promoting a feedback loop that strengthens performance. Studies in cognitive neuroscience have shown that selective attention and error repair share **neuronal activation processes in the prefrontal cortex**, suggesting a functional interdependence in the optimization of attentional control.

**Action Supervision Model (Norman & Shallice, 1986)**

Norman **and Shallice's (1986)** Action Supervision Model postulates that executive control regulates the **activation of behavioral schemas** through a supervisory system that detects inconsistencies and optimizes responses. Error repair is a fundamental component in this model, as it allows the identification of **failures in the execution of tasks** and the **reallocation of attention** towards performance improvement (**Shallice & Burgess, 1996**).

In this framework, employees with **greater repair skills** can detect **deviations in the execution of their tasks**, readjusting their strategies to improve the accuracy of their performance. The supervision of the action involves a **cycle of evaluation and correction**, in which attention is directed towards the identification of errors and the implementation of adjustments in real time. From this perspective, the capacity for repair allows individuals to optimize their concentration on priority tasks, minimizing interference and maximizing cognitive efficiency.

In addition, this model suggests that bug repair not only fixes bugs, but also acts as an **adaptive learning** mechanism, allowing employees to develop more effective strategies for handling the workload. The optimization of attentional control through repair strengthens the capacity for sustained concentration and improves efficiency in decision-making under conditions of high cognitive demand.

**Cognitive Load Theory (Sweller, 1988)**

The relationship between **repair and attention** can also be explained by the **Cognitive Load Theory** (**Sweller, 1988**), which focuses on the amount of **mental resources available** for information processing and task execution. According to this model, when the cognitive load exceeds the individual's processing capacity, there is a **deterioration in attention and performance**. However, a high level of **repair skill** can **reduce cognitive load** by automating correction strategies, allowing greater availability of attentional resources to cope with other work demands (**Paas & van Merriënboer, 1994**). From this perspective, employees who master repair processes can **optimize their cognitive management**, avoiding mental burnout and maintaining a sustained focus on their activities. Cognitive load decreases when corrective strategies are automated, freeing up attentional resources to handle new and complex information. In the organizational field, this implies that adequate repair capacity can improve productivity by reducing the impact of errors in the workflow and avoiding the accumulation of failures that generate mental overload.

In addition, recent studies have shown that the implementation of **structured repair techniques**, such as immediate feedback and process simplification, can improve attention efficiency in highly demanding work contexts. In this way, the relationship between **cognitive load, attention and repair** suggests that performance optimization requires a balance between **the ability to monitor errors and the regulation of mental load**.

**Neuroscience of Cognitive Control (Botvinick et al., 2001)**

From **cognitive neuroscience**, the relationship between **attention and repair** has been studied through **Cognitive Control**, a set of regulatory processes that allow the adjustment of behavior based on the detection of errors and the optimization of responses (**Botvinick et al., 2001**). Studies in neuroscience have shown that **error repair is associated with activation of the anterior cingulate cortex**, a key region in **monitoring performance and regulating attention** (**Ridderinkhof et al., 2004**).

This approach suggests that individuals with a greater capacity for repair have greater **stability in sustained attention**, since continuous performance monitoring allows cognitive strategies to be adjusted efficiently. The anterior cingulate cortex acts as an **internal feedback mechanism**, assessing the efficacy of responses and regulating the distribution of attentional resources. This interconnection between repair and attentional control supports the hypothesis that the ability to correct errors strengthens **cognitive endurance and stability in work performance**.

In addition, recent research has identified that **greater activation in brain areas associated with error repair** is correlated with **greater efficiency in decision-making and a lower level of cognitive fatigue**. This implies that repair not only optimizes attention in the short term, but also favors **cognitive resilience** and **adaptation to dynamic and demanding work environments**.

**Methodology and Expected Results**

To examine this relationship, a **quantitative, correlational and explanatory** design was used, based on the estimation of a **simple linear regression** model. Data from a sample of employees were analyzed in order to assess how repair predicts care in the work context.

The results are expected to confirm the hypothesis that **repair is a significant predictor of care**. In particular, it is anticipated that the coefficient of the *Repair* variable will be positive and statistically significant, which would indicate that employees who invest more effort in correcting errors develop a greater capacity to concentrate on their tasks. From an applied approach, these findings can be used to design **organizational strategies that optimize cognitive performance**, such as the development of training programs in

the regulation of mental effort, the implementation of work environments that minimize distractions, and the promotion of self-control strategies in problem solving.

## Methodology

### Study Design

This study adopts a **quantitative, correlational and explanatory approach**, with the aim of analyzing the relationship between **Care and Reparation** in the work context. A **simple linear regression** model was used, allowing the influence of repair capacity on sustained attention at work to be assessed.

The econometric model is expressed as follows:

$Y=B0+B1X1+uY = B_0 + B_1X_1 + u$

where:

- YY represents the dependent variable *Attention*,
- X1X_1 is the independent variable *Repair*,
- B0B_0 is the intercept of the model,
- B1B_1 is the coefficient of the explanatory variable,
- UU is the term for random error.

This design allows us to evaluate **whether an increase in repair capacity is associated with a greater attention span** in work performance.

### Population and Sample

The study population is made up of employees from various organizations, selected for the purpose of evaluating the relationship between their levels of care and repair at work. A sample of **233 observations was used**, ensuring representativeness and stability in the estimation of the statistical model.

The sample selection criterion was **non-probabilistic for convenience**, using previous records containing information on employees' levels of care and repair. Homogeneous conditions were guaranteed in data collection to minimize biases.

### Instruments

Scales validated in the literature on organizational psychology and cognitive regulation were used to measure the variables:

- **Attention**: Assessed using the **Sustained and Selective Attention Scale (SAS-T),** used in studies of cognitive performance in the workplace (Robertson et al., 1997).
- **Repair**: Measured through the **Cognitive Effort Regulation Scale (REC-10),** which assesses employees' ability to correct errors and adjust strategies in their daily tasks (Matthews et al., 2000).

Both scales have shown **high levels of reliability and validity in previous studies**, allowing the relationship between care and repair to be evaluated with methodological precision.

For the statistical analysis, the R software was used, applying regression techniques and diagnostic tests of the model.

### Data Analysis

The statistical analysis was carried out in several stages:

1. **Descriptive analysis:** Measures of central tendency and dispersion were calculated to examine the distribution of variables.
2. **Estimation of the regression model:** The ordinary least squares (OLS) **method was used** to determine the relationship between *Care* and *Repair*.
3. **Model validation:** Various econometric tests were applied to verify compliance with the assumptions of simple linear regression:
    - **GVLMA test:** Confirmed that the model meets the fundamental assumptions of the regression (p=0.0701p=0.0701).
    - **Ramsey test:** Verified the correct specification of the model (p=0.0618p=0.0618).

- **Rainbow test:** Confirmed the linearity of the model (p=0.5278p=0.5278).
- **Durbin-Watson test:** Ensured independence from errors (p=0.3722p=0.3722).
- **Breusch-Pagan test:** It validated the absence of heteroskedasticity (p=0.0676p=0.0676).

**Table 1**

*Linear Regression Model Diagnostic Tests*

| Test | Statistical | P-Value | Decision |
|---|---|---|---|
| **GVLMA (Global)** | 8.6615 | 0.0701 | Acceptable assumptions |
| **Ramsey (RESET)** | 2.8176 | 0.0618 | Correct Specification |
| **Rainbow** | 0.9872 | 0.5278 | Confirmed linearity |
| **Durbin-Watson** | 1.9573 | 0.3722 | No autocorrelation |
| **Breusch-Pagan** | 3.3385 | 0.0676 | Non-heteroskedasticity |

*Note.* p < 0.05 indicates statistical significance.

**Results**

Data analysis allowed us to evaluate the relationship between **Care** and **Repair** in employees within the work context. Through a **simple linear regression** model, the impact of the independent variable (*Repair*) on the dependent variable (*Attention*) was determined, which allowed validating the hypothesis that an increase in repair is associated with a greater attention span at work.

**Descriptive Statistics**

Before estimating the econometric model, a descriptive analysis of the variables was performed to understand their distribution and dispersion.

**Table 2**

*Descriptive Measures of Variables*

| Variable | Minimal | 1st Quartile | Median | Stocking | 3rd Quartile | Maximum |
|---|---|---|---|---|---|---|
| **Attention** | 8.00 | 21.00 | 26.00 | 26.01 | 31.75 | 40.00 |
| **Reparation** | 10.00 | 26.00 | 31.00 | 29.78 | 35.00 | 40.00 |

*Note.* The measurements are presented on a scale of 8 to 40 points.

The results indicate that both variables present homogeneous distributions, without extreme outliers that could affect the estimation of the model.

**Regression Model Estimation**

The estimated simple linear regression model is expressed as follows:

Y^=17.2543+0.2941X1+u\hat{Y} = 17.2543 + 0.2941 X_1 + u

where:

- Y^\hat{Y} represents the dependent variable *Attention*,
- X1X_1 is the independent variable *Repair*,
- 17.254317.2543 is the model intercept,
- 0.29410.2941 is the coefficient that measures the impact of *Repair* on *Care*,
- UU represents the term random error.

**Table 3** presents the estimated coefficients and their statistical significance:

**Table 3**

*Coefficients of the Linear Regression Model*

| Coefficient | Estimate | Standard Error | Value t | P-Value |
|---|---|---|---|---|
| **Intercept** | 17.2543 | 2.1396 | 8.064 | < 0.001 |
| **Reparation** | 0.2941 | 0.0701 | 4.195 | < 0.001 |

*Note.* Coefficients with p < 0.05 are considered significant.

The estimated coefficients indicate that **there is a positive and statistically significant relationship between Repair and Care**. Specifically, for each additional unit in *Repair*, the *Care increases* by approximately **0.2941 units**.

The adjusted coefficient of determination (adjusted R2R^2 = 0.0665) suggests that approximately **6.65% of the variability in Attention is explained by the variable Repair**, which indicates a significant but moderate relationship between both variables.

**Model Validation**

To evaluate the validity of the model, several statistical tests were carried out in order to verify compliance with the fundamental assumptions of the regression:

**Table 4**

*Linear Regression Model Diagnostic Tests*

| Test | Statistical | P-Value | Decision |
|---|---|---|---|
| **GVLMA (Global)** | 8.6615 | 0.0701 | Acceptable assumptions |
| **Ramsey (RESET)** | 2.8176 | 0.0618 | Correct Specification |
| **Rainbow** | 0.9872 | 0.5278 | Confirmed linearity |
| **Durbin-Watson** | 1.9573 | 0.3722 | No autocorrelation |
| **Breusch-Pagan** | 3.3385 | 0.0676 | Non-heteroskedasticity |

*Note.* $p < 0.05$ indicates statistical significance.

The results confirm that the model meets the criteria of **specification, linearity, normality and absence of autocorrelation**, which allows its coefficients to be interpreted with confidence.

**Interpretation of the Results**

The findings suggest that employees who **exhibit high levels of repair in their tasks also tend to show greater attention spans**. This result is consistent with the **Selective Attention Theory** (Posner & Petersen, 1990), which argues that monitoring and correcting errors require advanced attentional regulation mechanisms, which can strengthen the ability to concentrate at work.

From the perspective **of the Action Supervision Model** (Norman & Shallice, 1986), these results indicate that individuals who develop efficient strategies for error repair activate cognitive monitoring and control processes, which favors the maintenance of attention in critical tasks.

In addition, the **Cognitive Load Theory** (Sweller, 1988) supports these findings by suggesting that repair at work can reduce cognitive overload, optimizing the use of mental resources and improving sustained attention in task execution.

These results have **important implications for organizational management**, as they suggest that fostering the capacity for repair in employees could be an effective strategy to improve attention and efficiency in work performance. Strategies such as **training in self-control techniques and implementing structured work environments** could help maximize attention and minimize cognitive fatigue.

**Discussion**

The results obtained in this study confirm the existence of a **positive and statistically significant relationship** between **Repair** and **Care** in employees within the work context. Simple linear regression revealed that as repair levels increase, attention also increases, suggesting that workers who focus on correcting errors and optimizing their processes develop a greater ability to concentrate on their tasks.

**Relationship between Reparation and Care in the Theoretical Framework**

These results are consistent with the **Theory of Selective Attention** (Posner & Petersen, 1990), which postulates that attention is a system regulated by cognitive control mechanisms that allow focusing on relevant stimuli. According to this model, employees who actively participate in repair processes strengthen their monitoring and adjustment skills, facilitating the optimal distribution of attentional resources.

Likewise, the **Action Supervision Model** (Norman & Shallice, 1986) supports these findings by establishing that error correction processes activate the executive control system, promoting greater stability in concentration. This model suggests that repair

requires the activation of **working memory**, which in turn enhances sustained attention in problem-solving and efficient task execution.

From the perspective of the **Cognitive Load Theory** (Sweller, 1988), repair can be interpreted as a mechanism that reduces mental overload. When employees have effective strategies to correct errors, they decrease the need for redundant processing and optimize the utilization of their attentional resources, thus improving their ability to concentrate on work tasks.

The **Neuroscience of Cognitive Control** (Botvinick et al., 2001) also provides an explanation for these results. Previous studies have shown that error repair is associated with increased activation in the **anterior cingulate cortex**, a key region in attention regulation and performance monitoring. This neuroscientific evidence reinforces the idea that employees with high levels of repair develop cognitive skills that favor focus and maintenance of attention on complex tasks.

**Comparison with Previous Studies**

The results obtained in this study are consistent with previous research that has explored the relationship between care and repair in different organizational contexts. For example, Robertson et al. (1997) found that employees with high repair capacity show better performance in tasks that require sustained attention and complex information processing. In addition, research in the area of work psychology has shown that repair is positively related to cognitive flexibility and adaptability in dynamic environments (Reason, 1990). This is consistent with the evidence presented in this study, where repair at work was identified as a key factor in predicting attention.

From the perspective of cognitive ergonomics, recent studies have indicated that **efficient repair strategies are linked to lower mental fatigue and higher performance at work** (Matthews et al., 2000). This suggests that employees who develop better error-correcting skills can conserve their attentional resources and improve their overall performance.

**Implications for Organizational Management**

The findings obtained in this study have **important implications for talent management and the optimization of work performance**. The positive relationship between repair and care suggests that strengthening employees' ability to correct errors could be an effective strategy to improve their concentration and efficiency at work.

Some key strategies that could be implemented in organizations include:

1. **Training in self-correction techniques and cognitive control:** Training programs aimed at improving repair capacity can contribute to greater attentional stability and a reduction in errors at work.
2. **Designing structured work environments:** Creating organizational spaces with immediate feedback and clear procedures can facilitate error repair and improve sustained attention.
3. **Implementation of technological tools for performance monitoring:** Error management software and real-time feedback platforms can help employees correct errors more efficiently, optimizing their attention span.
4. **Fostering cognitive resilience at work:** Strategies such as mindfulness and meditation can improve the regulation of mental effort, favoring effective repair and concentration on tasks of high cognitive demand (Good et al., 2016).

**Conclusions**

The present study examined the relationship between **Repair and Care in the work environment**, confirming that there is a **positive and statistically significant** association between both variables. The estimation of the simple linear regression model indicated that as levels of repair at work increase, employee attention also increases, suggesting that the ability to correct errors and adjust strategies positively impacts concentration and focus on work tasks.

From a theoretical perspective, these findings reinforce the postulates of the **Theory of Selective Attention** (Posner & Petersen, 1990), which states that monitoring and correcting errors facilitates the targeting of cognitive resources on relevant information. Likewise, the **Action Supervision Model** (Norman & Shallice, 1986) explains that reparation is a process that activates executive control mechanisms, strengthening the stability of attention in the execution of work tasks.

The findings are also consistent with previous research that has shown that repair capacity is positively related to performance efficiency and reduced mental fatigue (Matthews et al., 2000). From organizational neuroscience, the relationship between repair and attention can be explained through the activation of the **anterior cingulate cortex**, a region of the brain responsible for monitoring performance and regulating cognitive effort (Botvinick et al., 2001).

**Practical Implications**

The results of this study have **important implications for organizational management**, as they suggest that strengthening employees' ability to repair can be an effective strategy to improve their attention and work performance. Based on these findings, organizations are recommended to:

- **Implement training programs in cognitive regulation**, aimed at improving the ability of employees to detect and correct errors efficiently.
- **Optimize feedback systems at work**, ensuring that employees receive clear and structured information about their performance to facilitate effective remediation.
- **Promote the development of structured work environments** that minimize cognitive overload and favor the active monitoring of errors.
- **Incorporate cognitive well-being strategies**, such as the use of active breaks and mindfulness techniques, to strengthen sustained attention and reduce mental fatigue in demanding tasks.

In conclusion, the findings obtained in this study reinforce the importance of repair at work as a key factor in predicting employee attention. From an organizational perspective, fostering repairability not only impacts worker efficiency, but can also lead to **improvements in concentration, productivity, and work process optimization**.

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