Volume 5 Issue 1 (June 2022)

ISSN 2614-0403 (printed)
ISSN 2614-7041 (online)

Psychological Research & Intervention

Published by the Department of Psychology, Faculty of Education, Universitas Negeri Yogyakarta

Psychological Research and Intervention
ISSN 2614-7041 (online)
ISSN 2614-0403 (printed)

Publisher

Department of Psychology, Universitas Negeri Yogyakarta

Setting

Lazuardi Bakhitsbari

Published biannually, in June and December
Psychological Research and Intervention is a biannual peer-reviewed scientific journal published by the Department of Psychology of Universitas Negeri Yogyakarta, which focuses on theoretical and applied researches in psychology.

Editorial
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Jl. Colombo No. 1, Karangmalang, Depok, Sleman, Yogyakarta 55281
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Foreword

We are very pleased that Psychological Research and Intervention is releasing its fifth volume in 2022. We are also very excited that the journal has been attracting papers from various regions in Indonesia as well as abroad.

Psychological Research and Intervention contains and spreads out the results of research and intervention in the science of psychology, and is aimed at facilitating discussion and discourse between scholars of psychology as well as further advancing the science of psychology. The editorial board expects comments and suggestions for the betterment of the future editions of the journal. Special gratitude goes to the reviewers for their hard work, contributors for their trust, patience, and timely revisions, and all of the journal team for their assistance in publishing this journal. Psychological Research and Intervention is continuing to grow and spread its wings to reach its aim in becoming a global initiative

Yogyakarta, June 2022

Editor-in-Chief

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Available online at: http://journal.uny.ac.id/index.php/pri

Intimacy of married couples: Study on communication through WhatsApp

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Article Info

Manuscript Received
April 1st 2022

Revision Accepted
June 21st 2022

Accepted for Publication
August 31st 2022

doi:
https://doi.org/10.21831/pri.v5i1.48831

Abstract

This study aimed to find out the relationship between intimacy married couple and their communication via WhatsApp. This quantitative research with correlational method determines the correlation between two variables. The participants in this study amounted to 79 people who has been married for 5 years and using WhatsApp as a medium to communicate with their partner. The data collected using intimacy scale for married couple and a WhatsApp communication scale. Based on the results of the analysis using Product Moment correlation technique and simple linear regression analysis, this study revealed that the correlation coefficient between the intimacy of married couple and WhatsApp communication is .782 with a significance of .000. Communication via WhatsApp application contributed 27.9% toward intimacy married couple. Therefore, it can be concluded that communication via WhatsApp application can affect the intimacy of married couple.

Keywords: *intimacy, communication, WhatsApp*

Suggested citation

Nurhayati, S.R., Prasetyo, J.N., & Ndayambaje, E. (2022). Intimacy of married couples: Study on communication through WhatsApp. *Psychological Research and Intervention,* 5(1), 1 – 7. https://doi.org/10.21831/pri.v5i1.488311

ISSN 2614-7041 (online) | ISSN 2614-0403 (printed)

Introduction

Humans are social creatures who need other people in their interactions. Human interactions with other people from different relationships, one of which is the intimate relationship of husband and wife. The intimate relationship of husband and wife is bound by law in the form of marriage. Article 1 of Law Number 1 of 1974 concerning marriage provides the definition of marriage as an inner and outer bond between a man and a woman as husband and wife with the aim of forming a happy and eternal family based on God Almighty. Even so, not a few married couples fail to build intimacy with their partners, resulting in divorce. Data from the Central Statistics Agency (BPS) recorded that in a period of four years, namely in 2012-2015, there were more than 1.6 million divorce cases that occurred in Indonesia. In 2012 there were 346,480 divorce cases in Indonesia. This figure had dropped in 2013 to 324,247, but rose again to 344,237 in 2014. In 2015 the divorce rate continued to increase to 347,256 cases. The Religious Courts Agency (Badilag) of the Supreme Court (MA) also stated that there are five factors that encourage the high divorce rate, namely, disharmony (97,615), lack of responsibility (81,266), economy (74,559), third party interference (25,310), and jealous (9,338).

Disharmony is the biggest factor that drives the high divorce rate according to Badilag. Dewi (2013) said that husband and wife interpersonal communication is positively related to marital harmony. Manna (2021) also said that poor communication in the household can trigger disharmony. Poor communication will also create wider problems, such as: one partner does not feel valued, cannot be shared, and is not there when needed.

Kurniawati (2017) said that communication is one indicator that plays a role in intimacy. Honest and open communication with your partner is a way to maintain the closeness, warmth, and happiness of a husband and wife relationship. Therefore, married couples need to communicate well so that intimacy can be maintained.

Along with the times, the ideal communication between husband and wife is difficult to realize. This is because there are married couples who are in dual career marriages, namely husband and wife both work and share household tasks (Pearson, 1985). The consequence of this is the lack of time that husband and wife have to be together. This leads married couples to find it difficult to balance themselves between work and household matters (Pew Research Center, 2014).

A wife no longer only takes care of the house and takes care of the children, but she also has to work outside the home. A husband no longer only works, but also has to share tasks with his wife to take care of the household and take care of the children. This situation requires married couples to make adjustments in the way they communicate with each other. One alternative solution to overcome this is a gadget.

Gadgets have become a new medium for building communication and increasing the level of emotional intimacy in married couples (Pew Research Center, 2014). In line with a survey from the Pew Research Center, research conducted by Campbell (2015) reveals that technology, including gadgets, can increase or decrease the intimacy of a married couple's relationship. One of the technologies that can be used to communicate with married couples is the WhatsApp application.

The Empathic Marketing Social Media Marketing Report for Indonesia reports that the most popular messaging service in Indonesia is WhatsApp. WhatsApp features help people, especially married couples to stay connected easily despite being separated by distance. The WhatsApp application is also equipped with an end-to-end encryption feature that allows no third party to know the conversations of the two parties.

ISSN 2614-7041 (online) | ISSN 2614-0403 (printed)

Research conducted by Anindya (2017) and Hikmah (2018) found that the WhatsApp application can support communication between husband and wife. The features contained in the WhatsApp application service allow married couples who do not have physical proximity to communicate openly and reduce the feeling of reluctance or hesitation when meeting face to face. Unfortunately, the features of the WhatsApp application that allow one to chat privately with other people are often abused by married couples. Rozaq (2018) says that there are many divorces caused by infidelity on social media.

Based on the description above, the formulation of the problem posed is how the intimacy of a married couple in terms of communication through the WhatsApp application. The purpose of this study was to determine the effect of communication through the WhatsApp application on the intimacy of married couples. The benefits of this research are expected to enrich the study of intimacy and WhatsApp communication.

Method

This study uses a quantitative approach with a correlational type. This study aims to determine the relationship of one variable to another variable. The study was conducted in four districts in the Special Region of Yogyakarta, namely, Sleman, Bantul, Kulonprogo and Gunung Kidul as well as the City of Yogyakarta.

Participants

The population in this study are men or women who have been married for at least 5 years and still have a partner and use the WhatsApp application to communicate with their partner. The sample in this study amounted to 79 people.

Data Collection and Analysis

This research consists of several stages. The first stage is the deployment of the instrument (intimacy scale and WhatsApp communication scale). The next stage is item selection and reliability. Item selection was carried out using the IBM SPSS for Windows 23 program. Item selection criteria were based on the total item correlation using the .20 limit. This is in accordance with the opinion of Azwar (2018) that the minimum limit of item-total correlation coefficient is .30, but this limit can be considered to be reduced to .20 if the number of items that pass does not meet the desired criteria.

Data obtained directly from research subjects. The data were obtained through 2 research instruments distributed by researchers to 79 subjects. The instruments used are the intimacy scale of married couples and the WhatsApp communication scale. The husband and wife intimacy scale consists of 21 items and the WhatsApp communication scale consists of 24 items. Each subject fills in the items, then the scale is returned to the researcher. The data analysis technique used in this study consisted of Pearson Product Moment correlation.

ISSN 2614-7041 (online) | ISSN 2614-0403 (printed)

Result and Discussion

Result

The subjects involved were 79 people consisting of 39 (49.4%) men and 40 (50.6%) women. Based on the descriptive test, the average score of a married couple's intimacy is 24 with a standard deviation of 6.706. The average WhatsApp communication score is 44.24 with a standard deviation of 23.699. The results of the descriptive analysis of the intimacy of married couples show that most of the subjects have a moderate level of intimacy and an occasional level of WhatsApp communication. Categorizations based on the intimacy level and WhatsApp communication are presented in Table 1 and Table 2.

The results of the normality test of the data on the variables of intimacy of married couples and WhatsApp communication which were analyzed with the One-Sample Kolmogorov-Smirnov Test were .080 where the results indicated that the data of this study were normally distributed (sig > .05).

Table 1. Intimacy Categorization

Category		**N**	**%**
Very High	$x > 34$	4	5%
High	$28 < x \leq 34$	21	27%
Moderate	$21 < x \leq 28$	28	35%
Low	$14 < x \leq 21$	20	25%
Very Low	$x \leq 14$	6	8%
Total		79	100%

Table 2. Communication Through *WhatsApp Categorization*

Category		**n**	**%**
Very Often	$x > 80$	9	11%
Often	$56 < x \leq 80$	9	11%
Sometimes	$32 < x \leq 56$	28	35%
Rarely	$9 < x \leq 32$	33	42%
Never	$x \leq 9$	0	0%
Total		79	100%

The results of the linearity test of the data showed that the significance value of the intimacy and WhatsApp communication variable was .000 (Sig. < .05). This can be interpreted that there is a significant linear relationship between the intimacy variable and the WhatsApp communication variable. The results of the Pearson Product Moment analysis test show that the value of the correlation coefficient between the variables of intimacy and WhatsApp communication is .782 with a significance of .000. This shows that the intimacy variable has a significant positive relationship with the WhatsApp communication variable.

The results of the simple linear regression test obtained a significance of .000 ($\alpha < .05$), with the regression equation $Y = 49.119 + 0.691X$. Based on the calculation results, the magnitude of R^2 is .279, which means that 27.9% of the variation in the intimacy of married couples can be explained by the WhatsApp communication variable. The rest (72.1%) is explained by other reasons outside the model. Based on these results, the proposed hypothesis is accepted, namely communication through the WhatsApp application can affect the intimacy of a married couple. The more frequent communication through the WhatsApp application, the higher the intimacy of a married couple. Conversely, the less communication through the WhatsApp application, the

ISSN 2614-7041 (online) | ISSN 2614-0403 (printed)

lower the intimacy of a married couple. The results of this study are in line with research conducted by Campbell (2015) on technology, communication, and couples' intimacy which states that the use of technology, including WhatsApp, can increase or decrease intimacy.

Discussion

For married couples, especially those who have multiple career marriages, the WhatsApp application plays a very important role in communicating. This is because communication is one of the factors that determine the level of intimacy of a married couple (Rathus, 2006). Communication through the WhatsApp application plays a role in building closeness and warmth in a husband and wife relationship. By looking at the WhatsApp application as an alternative solution to communication problems, married couples can show connectivity to each other even though they are physically apart.

Research conducted by Kurniawati (2017) found that one indicator of long-distance partner intimacy is communication through the media, one of which is WhatsApp. Communication through the WhatsApp application can be a bridge to keep exchanging stories and feel connected to each other. Honest and open communication with your partner is a way to maintain the closeness, warmth, and happiness of a husband and wife relationship.

Communication through the WhatsApp application can also help married couples to be open to each other with problems at home (Anindya, 2017). Sharing the self or opening up is an important ability for married couples to have. Self-disclosure in communicating through the WhatsApp application is able to encourage intimate reciprocal relationships such as expressing love and affection to partners (Pearson, 1983). This can reduce feelings of reluctance or hesitation when meeting face to face (Hikmah, 2018). The more often a husband and wife communicate openly, the higher the intimacy of a married couple.

In addition, discussing daily activities regularly with a partner, whether openly discussing feelings, sex, or beliefs, can make couples understand each other's nature. This can make couples love each other more, can satisfy each other, and trust each other's abilities. Effective communication can create good interpersonal relationships, so that married couples can avoid situations that can damage relationships and cause marriages to become disharmonious (Dewi, 2013).

In addition to sharing the self, the ability to acknowledge the existence of a partner or affirm the other is important to build respect and trust for each other. This is in line with Nurhayati's (2015) research which states that relationship intimacy is influenced by respect. A person can communicate comfortably and openly with his partner when there is mutual acceptance between them. The ability that underlies this is the ability to listen and empathize with your partner. Being able to listen and empathize with your partner implies that he or she is important (Pearson, 1983). This makes the messages clear and makes the couple feel that there is someone who can understand them well. So that it fosters trust and respect for partners that can affect the intimacy of the marital relationship. Therefore, the more often the couple acknowledges the existence of their partner, the higher the intimacy of a married couple.

Another important aspect in the communication of married couples through the WhatsApp application is becoming 'one' and transcending 'one'. Becoming 'one' or being one with a partner aims to form a bond between couples. This bond is the level of closeness between partners accompanied by warmth so that there is no gap between them (Nurhayati, 2015). This can be done by selecting a topic of mutual interest. In addition, discussing things that are important in decision making can also increase closeness to each other (Nurhayati, 2015). The characteristic of becoming 'one' is the use of the word 'we' in communicating in the WhatsApp environment and application. The more often couples express unity in communication, the closer the bond between the partners will be.

ISSN 2614-7041 (online) | ISSN 2614-0403 (printed)

On the other hand, couples also need to have the ability to break away from the bonds between partners. This is necessary to avoid the negative effects of dependence on a partner (Pearson, 1983). By paying attention to non-verbal expressions in conversation, partners can give the right response when telling stories. This is an important part of the intimacy aspect which shows that couples complement each other (Nurhayati, 2015). Even married couples who have a high level of intimacy can understand each other when the couple is sulking from the tone of voice used when communicating through the WhatsApp application. Couples are also not bothered in a situation where one of them has to take over the conversation in a WhatsApp group.

Conclusion

This study gives some light regarding the intimacy of married couples by identifying whether it is predicted by ways of communication, specifically mediated by the popular platform WhatsApp. Based on this research, it can be concluded that there is an effect of communication through the WhatsApp application on the intimacy of married couples. The results of this study indicate that communication through the WhatsApp application is a factor that can affect the intimacy of a married couple. Communication through the WhatsApp application provides an effective contribution of 27.9% to the intimacy of a married couple. We encourage future research to further explore the dynamics and the impacts of WhatsApp mediated communication on other marital quality variables such as satisfaction or conflict resolution, giving more comprehensive picture of the communication styles of married couples.

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ISSN 2614-7041 (online) | ISSN 2614-0403 (printed)

Psychological Research and Intervention
Volume 5 Issue 1, 2022, Page 8-18

Psychological Research and Intervention

Available online at: http://journal.uny.ac.id/index.php/pri

The influence of occupational safety and health on work engagement

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Article Info

Manuscript Received
June 15th 2022

Revision Accepted
October 10th 2022

Accepted for Publication
October 15th 2022

doi:
https://doi.org/10.21831/pri.v5i1.50823

Abstract

This study is conducted based on low work engagement in companies, possibly due to a lack of application of Occupational Safety and Health (OSH). This paper aims to determine the effect of Occupational Safety and Health (OSH) on employee work engagement. This research uses a quantitative approach to the type of ex post facto. The sampling technique in this research is purposive sampling, while the samples in this research were 96 employees. The instruments of this research used two psychological scales, namely the OSH scale and the work engagement scale. The data were analyzed using descriptive analysis and simple linear regression analysis. The results of the regression analysis score are 0,000 < 0,05. It can be concluded that there is a positive influence of Occupational Safety and Health (OSH) on work engagement. The coefficient determination or R Square is 0,498 or 49,8%, meaning that OSH influences 49,8% of employees' work engagement. The remaining 50,2% is influenced by other factors not examined in this study.

Keywords: *Occupational Safety and Health (OSH), work engagement, employee*

Suggested citation

Andreine, R. E. N., Kusmaryani, R. E., Purwaniningtyas, D. A. (2022). The influence of occupational safety and health on work engagement. *Psychological Research and Intervention*, 5(1), 8-18. doi: https://doi.org/10.21831/pri.v5i1.50823

Introduction

According to Law Number 13 of 2003 concerning Manpower, a company is an organization whose ownership can be owned by an individual, partnership, or legal entity, whether it is a private business entity or a state-owned company, which has employees or employees through payment of wages or benefits in another form. The company's goal is to gain profitability and business continuity in running it. To achieve profitability and the wheels of the organization continue to move to achieve the expected goals, it takes good capital to make it happen. The best capital is human resources or more often referred to as employees.

Employees, or employees in industrial and organizational settings, are one of the essential elements for realizing industrial and organizational success. An uncomfortable work environment will make employees change quickly and find it difficult to adapt. When carrying out their work, employee engagement is defined as how an employee thinks, feels, and acts in a way that aligns with organizational goals and consequently predicts many positive outcomes for the organization. One of the essential things in the management challenge is how the company involves employees, commonly called work engagement.

Schaufeli and Bakker (2002) state that employees have a positive, meaningful, and constantly work-related state of mind. For management, it is not surprising that companies have developed their engagement concept and ownership survey tools and claim that employee engagement drives business success.

Work engagement is a positive, satisfying state of mind characterized by strength, dedication, and absorption. Schaufeli and Bakker (2006) stated that in determining work engagement, it can be seen from three aspects: vigour, dedication, and absorption.

Based on the results of an initial survey conducted by researchers in April 2021 through an open-ended questionnaire, information was obtained that six (6) out of eleven (11) employees felt tired due to a lot of unfinished work, thus significantly affecting the workload. Thought. Some employees feel a gap when completing work, and some are passive in looking for solutions to find an answer. Employees with many tasks will find it difficult to break away so they must finish immediately to be able to complete the target. Five (5) out of eleven (11) employees feel engaged with their work. They said that being able to work is an honour because they have to undergo a challenging selection process, so they feel proud to be accepted as an employee. They also said that the salary given was commensurate with the work and

the facilities provided were satisfactory. They say they are always passionate about their work and concentrate fully when doing it. Employees involved in their work tend to have high enthusiasm and are active so that individuals with high engagement can achieve their work goals (Bakker & Leiter, 2010). HR said that some employees looked enthusiastic when doing their jobs, so completing them didn't take long.

A preliminary study in April 2021 also found that each employee will have good strength when the work environment is comfortable. Still, some employees also feel that the work environment is not conducive, which is related to the employee's low desire to complete work tasks. Regarding the company's support for the work environment, the interview with HRD PT X Yogyakarta branch showed that the implementation of OSH was carried out by the company's internals and by internal and external teams. Internal parties are employees and business colleagues, while external parties are other parties who enter a particular area. Although the implementation of OSH has been implemented, some employees still are negligent in their work. Three (3) out of ten (10) employees feel that the lack of infrastructure for OSH equipment and some tools have not been updated, while seven (7) out of ten (10) employees think that the available facilities are good and can help complete their work. The work environment also has good lighting, can control work tools, and minimize workplace accidents. In addition, PT X Yogyakarta branch has the principle of "Good Corporate Governance", where there are principles of good corporate governance,

ISSN 2614-7041 (online) | ISSN 2614-0403 (printed)

namely transparency, accountability, responsibility, independence, and fairness to develop and maximize the abilities of each employee regardless of background. Background such as religion, gender, position, and others. Employees can also convey complaints to colleagues, superiors, and HRD.

Based on the results of previous research, it was found that work engagement is influenced by several factors, namely organizational support, self-efficacy, and work environment (Firnanda & Wijayanti, 2021). Companies must pay attention to factors such as job resources and work environment. Job resources refer to work's physical, social, and organizational aspects to reduce job demands, physiological and psychological costs, and personal development. A good work environment encourages employees to be more confident in completing tasks according to their abilities (Rofiana, 2014). The work environment is crucial for employees because if the setting feels connected, safe, comfortable, and healthy, the perception of occupational health and safety or called Occupational Safety and Health (OSH), will also improve.

The high demands of work have begun to be balanced with the work safety provided by the company to employees. This can be seen from data from the International Labor Organization (ILO), which states that 4% of the total world gross domestic product is lost every year due to occupational accidents and diseases, health expenditures, pensions, absenteeism, and rehabilitation (Mekkodathil et al., 2016; ILO, 2017). A work accident is generally defined as an unexpected event. Along with the increasing demands of the workplace and anticipate it, companies often require the application of OSH in every activity carried out in hazardous locations and conditions that can impact comfort, health and safety. One of the skills companies need to apply is paying attention to the work environment and the safety system used. OSH problems and low employee involvement can be suppressed, one of which is if employees have good work engagement.

The perception of OSH with work engagement will significantly determine the company's progress because maximum worker conditions will affect the sense of employee involvement, especially in companies that can provide comfort, guarantee safety, and adequate facilities. Mathpati (2012) explains that many companies are starting to realize satisfied employees in increasing loyalty and productivity, but only employees who are intellectually and emotionally involved can engage with the company and are committed to the goals and values of a company.

Employee involvement can be increased by creating positive employee perceptions of the organization by providing support and concern for welfare (Saks, 2006). Employees will automatically increase their engagement, when they believe that their organization cares about what they do and cares about their welfare. Jobs and high job demands can cause employees to feel anxious, bored, and result in fatigue. According to Anoraga (2005), Occupational Safety and Health (OSH) is an organization's effort to create a work environment and provide a safe feeling for employees by paying attention to aspects of the work environment, technical equipment, and humans themselves. There are three aspects of OSH which include the work environment, technical equipment, and people. Aspects of the work environment refers to everything that is around employees that will affect the tasks performed by employees. The technical equipment aspect refers to work machines and tools because the condition of the machines and work tools can have a direct or indirect impact. The human aspect refers to direct or indirect human error when doing work.

OSH was chosen to be a factor that affects work engagement because occupational health and safety is an important aspect for employees to survive while in the work environment. Therefore, it is very important for companies to encourage the implementation of OSH among employees. Management's commitment to OSH shows the extent to which the organization shows concern and support for occupational health and safety.

ISSN 2614-7041 (online) | ISSN 2614-0403 (printed)

In the workplace, employees will face occupational health and safety threats from their duties. In running a good business, employees must be consistently protected through the implementation of the OSH system. This is in accordance with Law Number 1 of 1970 concerning Occupational Safety and Law Number 1 of 2003 concerning Manpower which explains that it is the obligation of employers to protect workers from potential hazards that occur.

Several studies explain that the human factor occupies a very important position in the occurrence of work accidents, namely 80% to 85% (Suma'mur, 2009). The role of Occupational Safety and Heath (OSH) services is to place and maintain employees in a work environment that is adapted to their physical and psychological abilities. Operational responsibility for good Occupational Safety and Heath (OSH) practice rests with the people performing and supervising the work, employees, operations personnel, and managers. Business providers must provide a safe workplace for employees to increase efficiency and productivity (Nwachukwu, 2007). Organizational support can have an impact on increasing commitment, job satisfaction, employee job involvement, work performance, desire to stay in the organization, and reducing tension at work, so as to increase organizational productivity.

One of the companies that develop these expectations is PT X Yogyakarta Branch. PT X Yogyakarta Branch develops a flexible work system, strives to build a comfortable work environment by paying attention to the functioning of the available facilities, providing support, and developing employees' self so that they can adapt to changing working conditions. Good performance from employees makes the company survive well. The implementation of OSH is one of the most important strategies for the organization in an effort to increase employee engagement. This is done so that individuals have a point of view to understand their behavior. In addition, this study can see the phenomenon of low engagement in work for employees who are associated with occupational safety and health. The implementation of OSH is a way for organizations to show how much the organization cares about the health and safety of employees. This is important to research so that companies are more open to various changes that may occur suddenly and pay attention to employee performance in following the company's flow in order to have high work engagement.

This study has differences with previous studies, researchers will examine the effect of Occupational Safety and Health (OSH) on Work Engagement. Therefore, this research is important to do so that it is useful to see how much influence Occupational Safety and Health has on Work Engagement for Employees of PT X Yogyakarta Branch. The results of this study are expected to assist the institution in setting management strategies that will be applied to its employees.

Method

This study uses a quantitative approach. The type of research used is ex post facto or non-experimental or empirical research. Ex post facto research is an approach to research subjects to examine what is already owned by the research subject in a reasonable manner without any deliberate attempt to give treatment to bring up the variables to be studied (Dantes, 2012). This research was conducted at PT. X Yogyakarta Branch. Data collection was carried out from October 2021 to April 2022. This study is a population study, involving all employees of PT. X Yogyakarta Branch, totaling 96 employees.

ISSN 2614-7041 (online) | ISSN 2614-0403 (printed)

Data collection, instruments and analysis

Data was collected using a psychological scale in the form of a Likert-scale with four alternative answer choices for each instrument. The psychological scale in this study will contain statements modified from the theory of Schaufeli and Bakker (2006) and the modified OSH theory from Anoraga (2005) to see the level of behavior related to these two variables. The research scale consists of four answer choices, namely (1) very unsuitable, (2) unsuitable, (3) suitable, and (4) very suitable. The Work Engagement scale consists of 26 items with the reliability value is 0.817, while the OSH Scale is 24 items with a reliability of 0.873. The data analysis technique was carried out by descriptive analysis and simple linear regression.

Descriptive Analysis. Descriptive analysis is an analysis that aims to provide a description of the data from variables obtained from the research subject group and is not intended to test hypotheses (Azwar, 2018). Data were collected through the distribution of questionnaires that were formed on a measurement scale. In this study, the measurement scale used is the Likert scale. After obtaining the total score, the scores are then categorized using the formula in Table 1.

Table 1. Categorization Norm

Category	Formula
Very High	$X > \mu + 1.5\sigma$
High	$\mu + 0.5\sigma < X \leq \mu + 1.5\sigma$
Moderate	$\mu - 0.5\sigma < X \leq \mu + 0.5\sigma$
Low	$\mu - 1.5\sigma < X \leq \mu - 0.5\sigma$
Very Low	$X \leq \mu - 1.5\sigma$

Note:
μ: theoretical mean
X: score
σ: standard deviation

Assumption Check. Normality test is used to determine whether any data taken is normally distributed or not. To make things easier, the researcher uses SPSS for Windows to test the normality of the data using the Kolmogorov-Smirnov normality test technique with $\alpha = .05$. Data that are normally distributed have $\alpha \geq .05$ (Ghozali, 2018). The linearity test aims to determine whether the dependent variable and the independent variable have a significant linear relationship or not. In this test the two variables are said to have a linear relationship if the significance is .05 (Ghozali, 2018).

Hypothesis Testing. Hypothesis testing aims to determine whether there is an effect of the independent variable (Occupational Safety and Health) on the dependent variable (work engagement). Through this step, a conclusion will be drawn to accept or reject the hypothesis that has been proposed. In a simple linear regression test to see how positive or negative it is, it can be through the value of the beta coefficient (β). The beta coefficient that does not have a minus sign (-), means that it has a positive effect and vice versa, if it has a minus sign (-), it means that it has a negative effect. The conclusion is drawn by comparing t count with t table with a significance level of 5%. If t count < t table then the influence of the independent variable on the dependent variable is not significant (Sugiyono, 2018). The general formula for simple linear regression in this study is $Y = a + bX$.

ISSN 2614-7041 (online) | ISSN 2614-0403 (printed)

Result and Discussion

Result

Descriptive Statistics. Based on the results of the descriptive analysis test, it was found that work engagement has a hypothetical mean = 65, SD = 13, a minimum score = 26, and a maximum score = 100. Based on the results of the descriptive test, work engagement is divided into five categories, namely very high as many as 95 employees (99%), and only one employee in the high category. This finding indicates that the average level of work engagement of employees of PT X is in the very high category with a percentage of 99%. Based on the categorization on each aspect of the work engagement variable, it shows that the highest score is the dedication aspect, which is 42.5% and the lowest score is the strength aspect, which is 27.2%.

Based on the results of the descriptive analysis test, it was found that OSH has a hypothetical mean = 60, SD = 12, minimum score = 24, maximum score = 96. Based on the results of the descriptive test OSH is divided into five categories namely very high category with 95 employees (99%) and only one in the high category. The data shows that the average OSH level of employees is in the moderate category with a percentage of 99%. Based on the calculation of categorization in each aspect, the highest aspect score is the work environment aspect, which is 37.8% and the lowest aspect score is technical equipment at 24.7%, meaning that everything that is around employees and has a great influence on the tasks carried out by employees.

Data Analysis. The normality test was carried out to find out the distribution of the data that had been taken was normally distributed or not. The testing technique used is Kolmogorov-Smirnov. Based on the significance value of Asymp. Sig. (2-tailed) is .177 or greater than .05. Therefore, it can be concluded that the distribution of the data in this study is normally distributed. Therefore, the prerequisites in the regression model have been met.

The linearity test aims to determine whether the dependent variable and the independent variable have a significant linear relationship or not. The results of the linearity test are said to have a linear relationship if it is significant .05. Based on the significance value (Sig.) of the output above, the Deviation from Linearity Sig value is obtained. is .276 > .05. It can be concluded that there is a significant linear relationship between the Occupational Safety and Health variable and the Work Engagement variable.

Hypothesis testing aims to determine whether there is an effect of the dependent variable and the independent variable. The hypothesis test of this study used simple linear regression analysis with the help of the IBM SPSS Statistics 21.0 program. Based on the ANOVA test or F statistical test, the calculated F value is 93.141 with a Sig value. .000 ($p < .05$), it can be concluded that the hypothesis is accepted and the OSH variable has a significant effect on Work Engagement. It is also seen that the coefficient of determination or R^2 is 0.498 or 49.8%, which means that the effective contribution of the OSH variable to work engagement is 0.498 or 49.8% and 50.2% is influenced by other factors not examined in this study.

Based on linear regression analysis, it can be concluded that OSH (X) can predict work engagement (Y). OSH has a positive influence on work engagement with a contribution value of 49.8%. This positive effect means that OSH is able to predict work engagement with a contribution value of 49.8%. These results prove that the research hypothesis is accepted.

ISSN 2614-7041 (online) | ISSN 2614-0403 (printed)

Discussion

Based on research that has been conducted on a number of 96 employees of PT X Yogyakarta Branch with demographic data of male employees totaling 67 people, female employees 29 people with an age range of 21-30 years with a working period of 6-10 years, and The latest education level is Diploma to Bachelor's degree, the results of the analysis show that the majority (99%) of employees of PT X Yogyakarta branch have a very high level of work engagement. Work engagement is a positive state, feeling of satisfaction, and working conditions that are obtained from strength, dedication, and absorption (Schaufeli et al, 2002). Employees with very high work engagement tend to have high enthusiasm and are active in their work so that they can achieve work goals. The results of a very high work engagement category can be influenced by a good and pleasant work environment for employees. In addition, good communication between superiors and employees can also make them more comfortable. This is in line with the opinion of Bakker (2011) which states that a pleasant work environment, supportive colleagues are work resources that can be extrinsic motivation as a predictor of work engagement.

The results of the descriptive analysis on OSH data also show that 99% of employees have a very high level of OSH as well. OSH is an organizational support effort towards occupational health and safety perceived by employees. Employees who have a very high OSH find it easier to carry out tasks that involve the work environment, be careful in the use of machines and work tools, and have the right placement in the type of work according to the skills, motivation, and talents of the employees.

Based on the results of the descriptive analysis, it shows that work engagement and OSH are at a very high level and there are differences in the findings in the field which state that work engagement found at PT X Yogyakarta Branch tends to decrease. This is due to differences in subjects in terms of age at the time of data collection as an initial survey because at the time of the initial survey, the majority of subjects who participated in data collection were employees aged >41 years, while the number of subjects for data collection as a result of the study was the majority aged 21-30. year. At the time of the initial field survey, it was found that only a small proportion of employees' behavior was found to be negative. Most employees show the opposite attitude.

The results of this descriptive analysis of work engagement show that the very high category can be described from the length of work and age. Based on the table of working hours, it can be seen that employees have a tendency to work long enough, namely 6-10 years as many as 31 employees or equivalent to 32.3% of the total respondents. Individuals who have a long period of time or work tend to be more involved in organizations or companies (Ju & Li, 2019). The longer the employee's working time span, the higher the work involvement in the company, so it can be concluded that a long working period causes employees to also have a good contribution in adapting to their work environment. Furthermore, it can be seen in the table of the age of the subject, the results of the age categorization of the subject are known that at most have the age of 21-30 years as many as 52 employees or by 54.2%. According to Etikariena (2019), the age range of 21 to 30 years is the age that makes a lot of innovation. An employee will show a positive, enthusiastic, active work attitude, and so on. After that, employees tend to provide new ideas that can develop the company.

The results of the OSH descriptive analysis are in the very high category as well. The reason that supports this behavior is long working hours. Based on the results of the descriptive analysis related to the length of work is 6-10 years as many as 31 employees or 32.3%. Employees with 6-10 years of service have implemented OSH properly and according to the rules. Knowledge about the implementation of OSH has been embedded in each employee, so that employee behavior in implementing OSH tends to be high.

ISSN 2614-7041 (online) | ISSN 2614-0403 (printed)

The results of other data analysis in this study indicate that there is an effective contribution of OSH to work engagement of 49.8%. The influence of OSH perception with work engagement will greatly determine the progress of the company, because maximum worker conditions will affect the employee's sense of involvement in the company, especially companies that can provide comfort, guarantee safety, and adequate facilities. The application of OSH can be a way for organizations to show how much the organization cares about the health and safety of employees. According to Kahuzuma and Schelehter (2008), it is explained that the driving force of engagement when an employee is given empowerment from the company's management system in an effort to increase his engagement with the company becomes the sole prediction in influencing an employee when he has the desire to quit and or terminate his employment relationship with the company. The process to improve the implementation of OSH by means of training in the form of providing knowledge and skills for employees to be able to carry out their work better, supported by the provision of facilities and infrastructure. The company always tries to implement OSH properly and must have good internal employee strengths. This is an effort to support the organization in maintaining OSH. In addition, it can be improved through the work environment. A conducive and adequate work environment will increase employee engagement, reduce stress and conflict levels, increase job satisfaction, increase commitment between employees and the company (Razak et al., 2016).

Based on the analysis of the categorization of each aspect of each variable, the results of the work engagement variable show the dedication aspect of 42.5%, which means that employees have a meaningful, enthusiastic, inspiring, proud, and challenged feeling. When employees have a high level of dedication, employees will be enthusiastic and will feel proud of their work (Schaufeli & Bakker, 2006). The absorption aspect is 30.3%, which means that employees will love their work and always feel involved with their work. The categorization of the strength aspect is 27.2%, which means that employees will give good effort and have enthusiasm in completing their work. The highest categorization score in the work engagement variable is the aspect of dedication which can be characterized by strong employee involvement in work, enthusiasm, inspiration, pride, and challenges. When faced with a difficult task or job, it does not become a workload, but makes him feel challenged in completing his task (Schaufeli & Bakker, 2006).

This indicates that the higher the OSH, the higher the work engagement. The results of this analysis are in accordance with the pre-determined hypothesis, namely that there is an effect of OSH on work engagement on employees of PT X Yogyakarta Branch. This is also in accordance with previous research conducted by Maula et al (2019), which showed a positive influence between perceptions of occupational health and safety on job involvement in field engineering employees of PT Haleyora Powerindo. According to Anoraga (2005), in implementing OSH, it is necessary to have a good understanding of aspects, including the work environment, technical equipment, and humans themselves. This explains the principle of applying work safety, that efforts need to be made not only to improve unsafe conditions, but also dangerous human actions (unsafe action).

Based on the analysis of the categorization of the OSH variable, 37.8% of the work environment aspects related to the safety of employees' implementation in the work environment were obtained. The human aspect is 37.5%, which means that work accidents, either directly or indirectly, usually occur due to human error, mistakes can be made by those who make design, construction, installation, as well as management, supervision, and all production processes. The human aspect is also related to OSH training which can improve the knowledge, skills, and attitudes of employees, so that employees are able to apply OSH. Furthermore, the technical equipment aspect is 24.7%, which means that the condition of machines and work tools can have a direct or indirect impact on the incidence of work accidents. The highest categorization score in the OSH variable is the aspect of the work environment which means that everything that is around employees and has a great influence on the tasks carried out by employees at work. The work

ISSN 2614-7041 (online) | ISSN 2614-0403 (printed)

environment has other factors, namely lighting, temperature and air circulation, noise, and work regulations. Employees who are indicated to have work engagement are influenced by how big their OSH is, for example in the aspect of the work environment, employees feel an urge in themselves to implement safety in the work environment (Saks, 2006). Examples are lighting, temperature, air circulation, noise, and work regulations.

Conclusion

Based on the research that has been done by researchers, it can be concluded that there is an influence of Occupational Safety and Health (OSH) on work engagement of employees of PT X Yogyakarta Branch with a contribution of 49.8%. This study can be concluded that there is an effect of variable X on variable Y which shows the higher the OSH, the work engagement that occurs in employees will also be higher.

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Psychological Research and Intervention
Volume 5 Issue 1, 2022, Page 19-27

Psychological Research and Intervention

Available online at: http://journal.uny.ac.id/index.php/pri

The state of self-regulated learning and academic dishonesty of undergraduate students during online learning

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Article Info

Manuscript Received
May 10th 2022

Revision Accepted
October 17th 2022

Accepted for Publication
October 18th 2022

doi:
https://doi.org/10.21831/pri.v5i1.49441

Abstract

The purpose of this study was to determine the condition of academic problems in the form of self-regulated learning and academic dishonesty in students during online learning and to examine the effect of self-regulated learning on academic dishonesty. This type of research is a correlational of quantitative approach. The study was conducted on 410 students in Special Region of Yogyakarta using online self-regulated learning scale and academic dishonesty scale. The results of this study indicate that student's self-regulated learning is mostly in the medium category with percentage of 52%. The aspect of self-regulated learning that has the highest average score is environment structuring, while the lowest aspect is time management. For academic dishonesty, most students are in the moderate category with percentage of 45.6%. this study also shows the F_{count} value of 24.471, a significance value of .00, and the regression equation Y=23.816-.090 which means that self-regulated learning has a negative effect on academic dishonesty. Self-regulated learning contributes 5.7% to academic dishonesty while 94.3% is influenced by other factors.

Keywords: *academic dishonesty; online learning; self-regulated learning*

Suggested citation

Kusuma, A.N. (2022). The state of self-regulated learning and academic dishonesty of undergraduate students during online learning. *Psychological Research and Intervention*, 5(1), 19-27. doi: https://doi.org/10.21831/pri.v5i1.49441

ISSN 2614-7041 (online) | ISSN 2614-0403 (printed)

Introduction

In formal education, college is the highest level of education. The implementation of education in college has different characteristics from the level of education below it. The learning system and culture in college is very different when compared to school. Undergraduate students have greater personal responsibilities than when they were students. Compared to school where students still need demands in various ways, universities places students as the center of their own learning management (Aji, 2016). Undergraduate students are required to learn more independently and stop relying only on what they get from the lecturer. One of the goals of learning in higher education is to build individuals into independent learners (Huwae, Neve, Mariana, Jelita, & Gina, 2019) with the hope that students will be able to compete in the job market.

In times of pandemic like this, students are increasingly faced with new challenges in learning. Students are required to immediately adapt to the existing conditions because learning system that originally took place offline has now turned into online. The current study shows that most students experience difficulties in online learning because they tend to have lack self-regulation skills in learning. (Peverly, Brobst, Graham, & Shaw, 2003; Anthonysamy & Hew, 2020)

Self-regulation is a form of learning about their ability to engage in appropriate thoughts, feelings, and behaviors so that they can pursue valuable academic goals, while unifying and reflecting themselves (Zimmerman, 2000). Ludwig, Haindl, Laufs, & Rauch (2016) said that self-regulation is a self-adapting ability to regulate emotions, cognition, and behavior to respond effectively to internal and environmental issues. In education context, self-regulation is referred to self-regulated learning (SRL). Barnard, Lan, To, Paton, & Lai (2009) state that self-regulation in learning consists of six aspects, including environmental management, goal setting, time management, seeking help, task strategies, and self-evaluation.

In Indonesia, most students' self-regulated learning (SRL) during the Covid-19 period is known to be in the medium and low categories with a percentage of 71.7% and 10.8% (Harahap & Harahap, 2020). This shows that students still need to adapt in learning and they need to learn regulate themselves during pandemic period.

Through the results of Puspitawati's research (2021), it is known that the lower self-regulated learning will lead to higher levels of academic dishonesty in students. Academic dishonesty is defined as behavior that violates the ethical code of honesty values in the learning process, such as cheating and plagiarism (McCabe & Trevino, 1993). Maramark & Maline (1993) stated that academic dishonesty includes cheating in the form of giving or receiving unauthorized assistance, receiving awards for work that is not original, and claiming other people's academic work as one's own, such as cheating on exams, imitating other people's work, or trace.

Nuss (1998) reveals that academic dishonesty is defined into two main categories, namely academic fraud and plagiarism. Academic fraud is a behavior of forming or doing false works in order to obtain an undue advantage, while plagiarism is the presentation of thoughts or the work of others without acknowledging the original source. Iyer & Eastman (2008) also explained that academic dishonesty includes four things, namely cheating behavior, outside help, plagiarism, and cheating using gadgets during tests (electronic cheating).

It is believed that the quality of education cannot be ensured if academic dishonesty is being committed in educational setting (Mulisa, 2015). The dishonest behavior carried out by the learner is caused by the lack of self-awareness about the importance of the task (Djamarah, 2002). Learners also have not been able to adapt to the current conditions of online learning. Students who are unable to regulate themselves their studies and then have a lazy attitude or do not want to work hard in learning will not understand the material and cause dishonest behavior such as cheating to appear (Palupi, Hasyim, &Yanzi, 2013). Therefore, students need to adapt to this kind of learning condition in order to be able to regulate themselves so they will have a sense of understanding about matter because this has a negative correlation with deceptive behavior (David, 2015).

ISSN 2614-7041 (online) | ISSN 2614-0403 (printed)

This research was conducted in the Special Region of Yogyakarta where 22 of the 30 best universities in Indonesia (Webometrics Ranking Web of Universities, 2021) are located on Java Island and 23% of these universities are in the Province of the Special Region of Yogyakarta which is famous for its educational culture as well as known as the City of Education. It would be interesting and useful to investigate academic dishonesty that occurs in areas with such backgrounds. In addition, the results of a survey conducted by Husnan and Pudjiastuti (2015) in six major cities in Indonesia, one of which is Yogyakarta, shows that the majority of students in schools and universities commit academic fraud.

This is consistent with the results of an interview with 15 undergraduate students from various universities in Special Region of Yogyakarta in May 2021, most respondents felt that there were quite a lot of changes during this online learning compared to face-to-face learning. Students feels that their self-regulated learning is getting lower for some reason, among which there is distraction from the digital technology used and distraction from people around. As a result, students become less able to fully focus their attention on their college courses and are unable to conduct self-regulated learning well according to the plan that has been made.

As a result of the interview, students acknowledge that the intensity of plagiarism behavior is increasing in some daring tasks due to lack of motivation. In fact, the students also admit that during the online exams, students work together and exchange answers with their friends because during the online learning process, the students can't regulate themselves. With this condition of online learning, student's chance of being able to do something unfair is increasing. This can have an impact on student's learning success and the characters building.

Based on the above analysis, the purpose of this research is to know the state of the academic problem which is self-regulated learning and academic dishonesty in undergraduate students during online learning and to test the impact of self-regulated learning on academic dishonesty. The use of this research is enriching knowledge about self-regulated learning and academic dishonesty in students, both for universities, lecturer, students, other researchers, and readers.

Method

This study was used quantitative approach with a type of correlation research and conducted online at several universities in Special Region of Yogyakarta. The quantitative approach is a research that emphasizes testing theories through measuring research variables with numbers and analyzing data with statistical procedures, so the solving problems involves calculating numbers and the data obtained will be informed in the form of numbers and then analyzed in order to obtain conclusions from the object that being studied or researched. This study refers to the type of ex post facto research, research that aims to find the causes that allow changes in behavior, symptoms or phenomena caused by an event, behavior or things that cause changes in the independent variables which as a whole have occurred (Widarto, 2013:3).

Participants

The population in this study were students of a diploma and a degree in Special Region of Yogyakarta. Sampling technique used was accidental-sampling or convenience-sampling, which means that samples were obtained from anyone who met or by chance filled out a research questionnaire. Total number of samples collected from this survey were 410 people. Characteristics of the participants can be seen on Table 1.

ISSN 2614-7041 (online) | ISSN 2614-0403 (printed)

Table 1. Demographic Data

Sample Characteristic	Frequency	Percentage
Gender		
Male	151	36.8%
Female	259	63.2%
Education Program and Semester Level		
D4	124	30,2%
S1	286	69,8%
Learning Type		
Online learning	394	96.1%
Blended learning	16	3.9%
Total	410	100%

Data Collection Techniques and Instruments

The data collection technique used in this study was questionnaire and through Google Forms. The research data were obtained directly through two instruments which were distributed to 410 students in Special Region of Yogyakarta. The instruments used were online self-regulated learning questionnaire which consists of 24 items with 5 likert points, e.g., I set standards for my assignments in online courses (r = 0.908) and academic dishonesty scale which consists of 7 items with 4 points of frequency level, e.g., During exam I tried to cheat on friend's work (r = 0.817).

Table 2. Blueprint of Self-Regulated Learning and Academic Dishonesty Scales

No	Dimensions	Item Numbers	Total Items
Self-Regulated Learning			
1	Goal setting	1, 2, 3, 4, 5	5
2	Environment structuring	6, 7, 8, 9	4
3	Task strategies	10, 11, 12, 13	4
4	Time management	14, 15, 16	3
5	Help-seeking	17, 18, 19, 20	4
6	Self-evaluation	21, 22, 23, 24	4
Academic dishonesty			
1	Cheating manually or with the help of gadgets	1, 2, 5, 7	4
2	Working together to commit dishonesty	3, 4, 6	3

Self-regulated learning is an individual effort to self-regulate in the learning process by using metacognitive abilities, motivational regulation, and behavioral direction whereas academic dishonesty is a variety of deviant actions that are not permitted and cannot be accepted in the work of academic matters.

ISSN 2614-7041 (online) | ISSN 2614-0403 (printed)

Result and Discussion

Result

Based on the hypothesis test, the results obtained are a constant value of 23.816 and a coefficient value of -0.090 so that the regression equation is Y = 23.816 - 0.090. This equation means that when there is no self-regulated learning value (X), then the value of academic dishonesty (Y) is 23.816 then every time there is an additional 1 value of self-regulated learning (X), then the value of academic dishonesty (Y) will decrease by 0.090. In addition, it is also known that between the variable of self-regulated learning and academic dishonesty, there are p significance value of .000 which is smaller than .05. So it can be concluded that H0 is rejected and Ha is accepted. That means there is a negative effect on self-regulated learning (X) on academic dishonesty (Y). These results support research from Puspitawati (2021) which states that self-regulated learning has a negative effect on academic dishonesty.

Consistent with the hypothesis of this study, self-regulated learning (X) simultaneously affects academic dishonesty, F = 24.471, p <.001. Thus, this regression model can be used to predict the dependent variable which in this study is academic dishonesty. The magnitude of the effect of the research variables can be seen from the results of the R^2 value of .057 which means that the contribution of self-regulated learning to academic dishonesty is 5.7% while the remaining 94.3% is influenced by other variables that are not examined.

The results of this study also found that the value of student's self-regulated learning was mostly in the medium category with a percentage of 52% or a total of 213 respondents. In addition, 46.8% of the total respondents are also known to have a good level of self-regulated learning. This shows that the majority of students in this study can manage themselves quite well in learning even though learning is carried out online or blend of online and offline.

Discussion

Based on the subject's entire response data on six aspects of self-regulated learning, it is known that aspects with the highest average value are environment structuring. This means that students already have a good environmental structure for learning. Students are also able to understand their respective needs so that they can study comfortably. Environmental comfort in learning has a positive influence on a fun and efficient learning process (Febriani, 2021). Therefore, with a supportive learning environment, students can achieve optimal learning outcomes.

But on the other hand, data obtained from respondents also shows that students tend to be less able to manage their time in learning. This is known from the average value of the lowest aspect, which is time management. The existence of non-face-to-face learning makes students have a greater chance of doing activities outside academic interest. There are many temptations that can distract when they want to learn, for example accessing entertainment media from the digital technologies they use. Time management has an impact on the learning process and can be one of the determinants of achieving the set learning target (Sunarya, Ladjamuddin, & Dewanto, 2017).

In addition to self-regulated learning, this study also reveals that there are still many students in this study who make academic dishonesty during online or blended learning. Although the frequency of academic dishonesty committed is not high, this behavior must still be considered because if it continues, it can have a greater negative impact in the future.

Based on this study, self-regulated learning with academic dishonesty have a negative and significant correlation. This is in line with the results of previous research by Puspitawati (2021) which stated that self-regulated learning has a negative effect on students' academic dishonesty. The higher level of student's self-regulated learning, the lower academic dishonesty. These results are also in accordance with the hypothesis proposed in this study, that there is a negative effect of

ISSN 2614-7041 (online) | ISSN 2614-0403 (printed)

self-regulated learning on students' academic dishonesty during online learning in the Special Region of Yogyakarta. The role of self-regulated learning against academic dishonesty is said to have negative effect because if students are able to carry out a good self-regulation process in dealing with learning situations, then these students are able to face demands and carry out their roles well.

DiVall & Schlesselman (2016) said that fear of failure was the reason for learners to behave dishonestly. A lazy and unprepared student in their learning process will feel anxious and worried while facing difficulties in education and fear of failure. It then makes some of the students prefer to take shortcuts by behaving dishonestly so that they can achieve their goals without being overwhelmed with doubt. Sujana & Wulan (1994) said that students with high intelligence but with unfair behavioural intensity could be overwhelmed by hopes, such as gaining higher values or succeeding in testing. Even if the test is very easy, still they are relying on their friends' answers for confirmation (Diego, 2017). They actually capable but fearful of failing because of pressure. For example, demands from parents or demands from within themselves, like wanting to understand the matter and get high value but too busy with other activities.

Students with the ability to regulate themselves in good learning will be able to focus on their learning goals, try learning strategies, regulate time and learning environments, and evaluate their understanding. Thus, students can understand the material and create confidence in themselves so when they faced with an academic problem, students will feel capable to solve it on their own.Then when a student fails or receives worse than their hopes, or those around, they will continue to do self-evaluation, then re-design the learning plan, realize it, and re-evaluate what they has achieved.

It is different from students with lower self-regulated learning. Students will have an irregular learning process and didn't understand the material. These misunderstandings makes students feel anxiety and tension when they faced with difficulties, such as testing. People experiencing anxiety tend to feel self-threatened and engage in unethical acts to restore confidence (Eshet, Steinberger, & Grinautsky, 2021), in academic context is such as cheating.

Not only that, when individuals with poor self-regulated learning get results that are not in line with expectations, individuals will feel unhappy about the failure but then still did not try to evaluate themselves or improve. The desire to avoid failure on the one hand and the lack of readiness to work hard on the other will lead the individual to conflict (Sujana & Wulan, 1994). Students with conditions like this are the ones who eventually decide to pass the test or just use the most possible strategy, which is to act unfairly.

Students need to have a high level of consciousness about the importance of the learning process in order not to get involved in impartial action. The right education process is not only about evaluating results, but also about learning and determining the value of the student's character itself. Expected through the learning process, competences and characteristics of students can be further developed so that they can become the capital in preparing for competition in the global era.

Conclusion

From the results of this study, it can be concluded that there is a negative effect of self-regulated learning on students' academic dishonesty during online learning in the Special Region of Yogyakarta. This shows that to minimize the occurrence of academic dishonesty, it can be done by seeking better self-regulated learning. If students are able to regulate themselves in learning in the form of goal setting, environment structuring, task strategies, time management, help seeking, and self-evaluation, dishonesty in academics will be lower.

ISSN 2614-7041 (online) | ISSN 2614-0403 (printed)

Suggestion

Self-regulated learning in most students is good, but in terms of time management in this study, the student response value is the lowest average compared to other aspects. To maximize the ability or character of students, it would be better if students were able to manage their time. This can be done, for example, by creating a time-sharing plan and then specifying and implementing the schedule. Students can also ask for help from those closest to them to remind each other. The next researcher is expected to develop this research by taking factors that can influence academic dishonesty other than self-regulated learning. Because in this study, there were other unknown factors that are not examined in the study.

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Psychological Research and Intervention
Volume 5 Issue 1, 2022, Page 28-36

Psychological Research and Intervention

Available online at: http://journal.uny.ac.id/index.php/pri

Comparing the pace of life of a city: Size and average temperature as predictors

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Article Info

Manuscript Received
June 6th 2022

Revision Accepted
October 28th 2022

Accepted for Publication
October 29th 2022

doi:
https://doi.org/10.21831/pri.v5i1.50292

Abstract
Pace of life has been found to be associated with various life outcomes such as mental health and well-being to information distribution and economic development. Every city has a different pace of life due to its specific characteristics. Across two studies, we examined the role of temperature and number of populations (city size) as the predictors of pace of life. In the first study, we compared Bandung and Jakarta and in the second study, we compared Jakarta and Depok. Each pace of life index was generated by mean scores of walking speed, working speed and clock accuracy. Through field observation in each city's Central Business District, we found that based on temperature, Jakarta has higher means of walking speed (M=15.3) compared to Bandung (M=13.6), significantly with mean difference 1.71 (t(158)=5.32, p<.001, d=.841). Jakarta is also significantly higher on the working speed indicator (M=25.7) compared to Bandung (M=17.5) with mean difference 8.22 (t(18)=2.49, p=.011). In the second study, we found that Jakarta has significantly lower means of walking speed (M=14.3) compared to Depok (M=17.9) with mean difference 3.54, t(158)=11.058, p<.001. Similarly, Jakarta also has lower means of working speed (M=18.58) and clock accuracy (M=1.33) compared to Depok (M working speed=19.9, M clock accuracy=3.67), although not significant. Overall, as predicted, based on temperature, the colder city Bandung has a faster pace of life compared to Jakarta. Jakarta also has a faster pace of life compared to Bandung, although significant only for its walking speed.
Keywords: *pace of life; temperature; population; central business district*

Suggested citation
Permatasari, I., Baswara, B. & Adira, N. (2022). Comparing the pace of life of a city: Size and average temperature as predictors. *Psychological Research and Intervention*, 5(1), 28 – 35. https://doi.org/10.21831/pri.v5i1.50292

ISSN 2614-7041 (online) | ISSN 2614-0403 (printed)

Introduction

Urban life has been subject to many studies. This could be attributed to its fast development compared to rural areas. One dimension of urban life is regarding its pace of life. Previous researches have compared cities' pace of life both within and between countries (Amato, 1983; Garhammer, 2002; Gross, Murthy, & Varshney, 2017; Levine & Bartlett, 1984; Levine & Norenzayan, 1999).

Pace of life is has been found associated with various life outcomes (Paiva, Cachinho, & Barata-salgueiro, 2017). Pace of life is correlated to suicide rate (Lester, 1999), quality of life (Garhammer, 2002), and heart diseases (Levine & Bartlett, 1984). It is also been found associated with stress levels (Lippke, Schalk, Kühnen & Shang, 2021), effort exhausted to work (Vedula & Kim, 2017), high level of body temperature which induces stress (Melnikov, Krzhizhanovskaya, Lees, Sloot, 2020), driving speed (Goldbach, Hoffmann, Hoppe, Pitz & Thommes, 2020) and work performance (Hoffmann, Hoppe & Ziemann, 2021; Hoffmann, Hoppe & Ziemann, 2022). Not only affecting people directly, pace of life could also influence the rate of information distribution in one area. For example, pace of life could cause information distribution through social media platform like Twitter faster (Gross et al., 2017). In conclusion, pace of life is one important predictor of mental and physical health as well as information accessibility.

One research conducted by Levine and Norenzayan (1999) in cities among 31 countries. They had found various factors predicting pace of life in a city, namely economy, temperature, cultural values and number of populations.

This research will focus on two aspects which are temperature and number of populations. Cities with colder temperatures are predicted to have a faster pace of life. Other than temperature still rarely researched on, temperature is chosen because Levine and Norenzayan research was conducted in different cities from different countries in which this aspect interacted with cultural values that could affect pace of life differences. Our first study aims to revisit this research question whether temperature could predict pace of life by comparing two cities within the same country with different temperatures in one country with similar cultural values.

Jakarta and Bandung have different climates. Jakarta's average temperature is 27.6 °C while Bandung is 23.3 °C. Data was taken from climate-data.org, which is a website compiled of world cities' temperature. Average temperature difference 4.3 °C between cities is considered sufficient to explain differences in cognitive capabilities (Yeganeh, Reichard, McCoy, & Bulbul, 2018). Yeganeh et al. (2018) found that a difference of 4.34 °C could decrease cognitive performance by as much as 0.4%. Cognitive performance is an indicator of pace of life in terms of working speed. Research on temperature difference also found not only influencing working speed, this difference also influences walking speed (Lan, Wargocki, & Lian, 2014). Physical performance tends to decrease in hotter climates (Ozgunen et al., 2010). Temperature also influences economic activity (Heal & Park, 2013), which in turns predict pace of life (Levine & Norenzayan, 1999; Walmsley & Lewis, 1989). Based on these researches, we hypothesized that Bandung will have a faster pace of life compared to Jakarta.

Second factor chosen is the number of populations since previous researches have indicated the bigger the city, the faster the pace of life (Levine & Bartlet, 1984; Amato, 1983; Bornstein, 1979; Finnis & Walton, 2008; Franek, 2013). One of big city indicators is the number of populations. This pace of life difference could be attributed to its economic activity (Walmsley & Lewis, 1989). The bigger the city, the higher the living cost which turns its citizens to put time in high regard and increase their tendency to feel running out of time in search of money (Walmsley & Lewis, 1989).

This research is a replication study of Levine and Norenzayan's Pace of life of City in 31 Countries. We conducted two studies using two cities within the same country. The first study was conducted to test the influence of temperatures towards pace of life. Cities chosen as the target cities are Jakarta and Bandung, Indonesia. Various reasons were considered to pick these two cities.

ISSN 2614-7041 (online) | ISSN 2614-0403 (printed)

First reason was the ease of accessibility. Both are big cities with relatively close distance separating them. Second reason was that these two cities have quite significant climate differences.

Second study was conducted to test the effect of the number of populations towards pace of life. This second study was conducted to compare pace of life between two cities in Indonesia, Jakarta as megapolitan city with estimation of 10.37 million people (katadata.co.id, 2018) and Depok as metropolitan city (Utami & Kurniawati, 2018) with estimation of 2.26 million people (Badan Pusat Statistik Kota Depok, 2018). We also hypothesized that Jakarta will have a faster pace of life compared to Depok.

Method

Study 1

This study used field experiment design which manipulates variable independents through natural observation (Cozby & Bates, 2015). Data collection was conducted in two Central Business District (CBD) in Jakarta and Bandung. Jakarta's CBD consists of Senayan Central Business District (SCBD) and Kuningan, while Bandung's CBD consists of the area along Asia-Afrika street and R.E. Martadinata.

Observation on three pace of life indices described by Levine and Norenzayan (1999), those are:

Walking speed: Walking speed measurement was conducted in two different Central Business District areas in each city. Every person's walking speed was measured for each 20 meters marked by the observer. Every measurement was conducted using a digital stopwatch. The researcher excluded people with physical disabilities, children or window shoppers since their walking speed might be varied based on specific characteristics. The measurement were conducted during business operation time which is 9 AM – 5 PM.

Working speed: Working speed was measured by observing post office officers' working speed in 10 post offices spread along the two cities. Working speed was measured right after the letter was taken by the post office officer until they finished giving the change and the bill. Due to few numbers of post office, we decided to modify it into minimarts.

Clock accuracy: They also measured clock accuracy located in every public space in the two cities.

Some changes in the indices were employed to adjust the field situation, for example:

Walking speed: Walking speed measurement was conducted in two different areas in each city, SCBD and Kuningan in Jakarta, and Asia-Afrika street and R.E. Martadinata street in Bandung. Every person's walking speed was measured for each 20 meters marked by the observer. Every measurement was conducted using a digital stopwatch. We excluded people with physical disabilities, children or window shoppers since their walking speed might be varied based on specific characteristics. We conducted the measurement during business operation time which is 9 AM – 5 PM. Total number of samples observed was 80 people with 40 people in each observation point (n Male = 20, n Female = 20).

Working speed: Working speed was measured by observing minimart cashiers' working speed in 10 minimarts spread along the two cities. We bought a lollipop (controlled with similar brand across the minimarts) and paid exactly Rp10.000,- in cash so that we would always be given the money changes whether in paper or coin money. Working speed was measured right after the lollipop was taken by the cashier until they finished giving the change and the bill.

Clock accuracy: We also measured clock accuracy located in every public space in the two cities. We measured the accuracy by comparing the time on the clock with the time in our internet

ISSN 2614-7041 (online) | ISSN 2614-0403 (printed)

synchronized gadget. Public spaces targeted for this measurement are the closest hospitals with our location in both cities.

Data analysis was conducted by comparing means of each indicator used for the pace of life measurement. We also conducted the overall pace of life index for each city, by transforming the scores to standardized Z-scores. Each indicator and the overall pace of life index differences for both cities will be analyzed using independent sample t-test.

Study 2

We conducted an identical field experiment as in study 1 for study 2. The only difference is the target location. We collected data from two business areas of Jakarta and Depok. Jakarta's business area chosen was central business district in Sudirman while Depok's business area chosen was central business district in Margonda. Similar indicators were used and measured using similar situations. For working speed, we measured the working speed of minimart workers along the area in giving the money change after we bought 600 ml mineral water with Rp10.000,- cash (similar brand across each observation point). We also measured walking speed and clock accuracy with similar methods as study 1.

Result and Discussion

Result

Study 1

Below is the descriptive table for each measurement conducted using statistical program jamovi ver 0.9.2.8. Higher scores for both indicators and the overall index indicate the slower its pace of life.

Table 1. Measurement means of pace of life in Jakarta and Bandung

Descriptive	City	N	Mean	Mean diff.	Median	SD	SE
Walking speed	Jakarta	80	15.3	1.71	14.8	1.91	0.214
	Bandung	80	13.6		13.5	2.16	0.241
Working speed	Jakarta	10	25.7	8.22	24.2	9.57	3.02
	Bandung	10	17.5		16.4	4.16	1.32
Clock accuracy	Jakarta	3	4.00	0.333	4	1.00	0.577
	Bandung	3	4.33		5	4.04	2.33
Overall Pace of life Index	Jakarta	93	3.23	2.15	-0.218	0.989	0.103
	Bandung	93	1.08		-0.0574	0.989	0.103

Jakarta has higher means of overall pace of life index (M=3.23) compared to Bandung (M=1.08). Jakarta has higher means of walking speed (M=15.3) compared to Bandung (M=13.6), significantly with mean difference 1.71 ($t(158)=5.32$, $p<.001$, d=.841). Jakarta is also significantly

ISSN 2614-7041 (online) | ISSN 2614-0403 (printed)

higher on the working speed indicator (M=25.7) compared to Bandung (M=17.5) with mean difference 8.22 (t(18)=2.49, p=.011). Although not significant, mean differences were also found in clock accuracy indicator in which Jakarta (M=4.00) has slightly lower time differences compared to Bandung (M=4.33). The overall pace of life index showed Bandung has a faster pace of life compared to Jakarta. This result shows that temperature differences could influence walking speed and working speed in both cities. Colder temperature of Bandung support physical activities such as walking. Colder temperature also predicted cognitive performance (Yeganeh et al., 2018), which might explain why Bandung has faster working speed compared to Jakarta.

Study 2

Below is the descriptive table for each measurement for Jakarta and Depok's pace of life conducted using statistical program jamovi ver .9.2.8. Higher scores for both indicators and the overall index indicate the slower its pace of life.

Table 2 . Measurement means of pace of life in Depok and Jakarta

Descriptive	City	N	Mean	Mean Diff.	Median	SD	SE
Walking speed	Depok	80	17.87	3.57	17.63	2.259	0.253
	Jakarta	80	14.3		14.3	1.76	0.197
Working speed	Depok	10	19.99	1.407	20.5	6.51	2.06
	Jakarta	10	18.583		16.4	8.14	2.57
Clock accuracy	Depok	3	3.67	2.34	4	2.52	1.45
	Jakarta	3	1.33		1	0.577	0.333
Overall Pace of life Index	Depok	93	4.301	5.376	-0.108	0.989	0.103
	Jakarta	93	-1.075		-0.0398	0.989	0.103

Jakarta has lower means of overall pace of life index (M=4.301) compared to Depok (M=-1.075). Jakarta has significantly lower means of walking speed (M=14.3) compared to Depok (M=17.9) with mean difference 3.54, t(158)=11.058, p<.001. Similarly, Jakarta also has lower means of working speed (M=18.58) and clock accuracy (M=1.33) compared to Depok (M working speed=19.9, M clock accuracy=3.67), although not significant. Overall, as predicted, bigger city Jakarta has a slightly faster pace of life compared to Depok, although this difference is only significant in their walking speed.

ISSN 2614-7041 (online) | ISSN 2614-0403 (printed)

Discussion

Our first study shows that temperature could be a significant predictor for a city's pace of life. Bandung with colder temperature has the faster pace of life compared to Jakarta. This is in line with Levine and Norenzayan's classic finding which suggests hotter climate will predict slower pace of life. Previous research has shown how temperature could play a role into affecting physical and cognitive performance of an individual (Lan et al., 2014; Ozgunen et al., 2010; Yeganeh et al., 2018) which in turn will predict the cities' pace of lives. Bandung's colder temperature facilitates more productive working space and increases its speed.

However, there still exists contradictory findings in explaining the relationship between pace of life and temperature, since other researchers have suggested bigger city will predict faster pace of life compared to smaller one (Levine, 1990; Amato, 1983; Levine & Bartlett, 1984). Jakarta is by a number larger than Bandung so based on this finding, it's supposed to have a faster pace of life. On the contrary, what we found did not support this hypothesis. Future research could address this gap to explore which indicator play the bigger role in explaining a city's pace of life. We also acknowledge the sample limitation of our study which might contribute to the difficulties in finding generalization.

Our second study was aimed to replicate the findings by previous research regarding the impact of a bigger city (Levine, 1990; Amato, 1983; Levine & Bartlet, 1984; Bornstein, 1979). Although not significant, our general findings in the second study are in line with this prediction. This pace of life difference could be attributed due to the difference in living expenses between two cities (Walmsley & Lewis, 1989). Jakarta has a higher living expense compared to Depok. Monthly expense for Jakarta reaches 7.5 million Rupiah per month, and is the most expensive city to live in Indonesia (Depokrayanews.com, 2017). This fact could turn Jakarta people to feel more rushed by the time and they tend to move faster to fulfill their daily needs.

The failure to acquire significance in our second study can also be explained by the limited number of samples, especially in the working speed and clock accuracy indicators. We failed to gain the minimum sample for t-test of 10 (Bordens & Abbott, 2011) in the second study due to the fact that there were minimum numbers of minimarts located in the second area of the observation. We suggest future research to consider adding more samples or find other working situations that can be measured.

Our study is the first to replicate Levine and Norenzayan (1999)'s study in Indonesia and also expand it by comparing two cities located in the same country. Previous research has found differences among cities from different countries (Amato, 1983; Bornstein, 1979; Levine & Bartlet, 1984; Levine & Norenzayan, 1999). This decision of choosing different countries comes from the fact that the pace of life could also be explained by cultural differences, which are more salient between countries. However, our findings generally indicate that pace of life could also differ by different cities in one country with more similar cultures and this difference is better explained by the temperature and the number of populations.

Pace of life has been found to be associated with various life outcomes such as stress levels (Lippke, Schalk, Kühnen & Shang, 2021; Melnikov, Krzhizhanovskaya, Lees, Sloot, 2020), working performance (Vedula & Kim, 2017), and even health (Levine & Bartlett, 1984) to suicidal tendencies (Lester, 1999). This implication can be considered to highlight the importance of the pace of life measurement index of a population in a country. By developing this idea, we hope future research could expand the pace of life study and its impact especially in Indonesia which comprises more diverse cities, cultures and economic capital.

ISSN 2614-7041 (online) | ISSN 2614-0403 (printed)

Conclusion

Our study supports the idea of temperature as the predictor of a city's pace of life. By comparing Bandung and Jakarta as two cities with contrasting temperature levels, we found that the colder city Bandung has a faster pace of life compared to Jakarta. Although not overall significant, we also found that Jakarta as a bigger city compared to Depok has a slightly faster pace of life, especially in terms of walking speed. This finding lays a basic foundation for future research to regard pace of life as an important indicator for population comparison, and eventually as a predictor of better life outcomes among cities in Indonesia.

Suggestion

We failed to replicate some of the findings due to sample limitation which is also restricted by the small range of observation points in our study. We suggest future research to conduct a larger scale pace of life index measurements by expanding observation area, adding more cities with comparable characteristics and more indicators to get a more comprehensive look of cities' pace of lives.

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Psychological Research and Intervention
Volume 5 Issue 1, 2022, Page 37-43

Psychological Research and Intervention

Available online at: http://journal.uny.ac.id/index.php/pri

Comparison of cognitive strength and weaknesses between visually impaired children and non-visually impaired children

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Article Info

Manuscript Received
June 3rd 2022

Revision Accepted
October 29th 2022

Accepted for Publication
October 29th 2022

doi:
https://doi.org/10.21831/pri.v5i1.50189

Abstract

Visually impaired children experience limited visual abilities in learning and identifying the world. However, there has yet to be an intelligence measuring instrument containing sub-tests fit to their abilities and limitations. Therefore, this study aims to determine whether the intelligence of visually impaired children and non-visually impaired children as a step for formulating measuring instruments in the future. This research was conducted by survey with a quantitative approach using the WISC-R instrument. The WISC instrument was used because of its advantage compared to other measuring tools, namely the reliability of the instrument that has been approved by many parties and its validity has been tested. The data analysis uses Mann-Whitney U Test to hypothesize that there is a significant difference in the intelligence test results between visually impaired children and non-visually impaired children, it was proven in this research, especially on the performance sub-scale. This study found a significant difference in intelligence between visually impaired children and non-visually impaired children, especially in IQ Performance. Meanwhile, there is no significant difference in verbal IQ between visually impaired children and non-visually impaired children. The results of this study are expected to be the basis for developing intelligence measuring tools for visually impaired children s in the future, adding insight into the differences in intelligence results in visually impaired children and non-visually impaired children, and knowing the weak aspects of measuring intelligence in visually impaired children s with existing tools.

Keywords: *visually impaired children; intelligence; measuring tools.*

Suggested citation

Dewanti, N. A., Mayantya, D. L., Ardiana, B. Y., Wicaksono, B. (2022). Comparison of cognitive strength and weaknesses between visually impaired children and non-visually impaired children. *Psychological Research and Intervention*, 5(1), 36-42. doi: https://doi.org/10.21831/pri.v5i1.50189

ISSN 2614-7041 (online) | ISSN 2614-0403 (printed)

Introduction

Intelligence as defined by Binet is the ability to come up with thought, recall, and think in abstract terms (Purwanto, 2010). Whereas, according to Wechsler, intelligence is defined as ability that is essential to achieve success, such as persistence, perseverance, concentration, and practical ability (Cohen et al., 2013). Measuring intelligence needs to be done with a series of tests and assessments to acquire accurate results (Nur'aeni, 2012). Usually, the result of such test is expressed in IQ score (intelligence quotient). IQ is a number that gives the possibility to make comparisons of intelligence level (Gregory, 2015).

Measurement of intelligence needs to be done to help individuals recognize their potential so that it is expected for them to develop strategies that support a better future. In addition, it can also measure individual readiness to adapt and start their academic journey (Cohen et al., 2013). Therefore, the measurement of intelligence is relevant to education because intelligence influences individuals' ability in receiving lessons.

Knowing a student's intelligence will make it easier for teachers and psychologist to determine strategies for guiding them to achieve educational success. Further, it can also help students recognize their potential. Therefore, a child needs to get an intelligence measurement facility to make it easier for them to plan a better future (Nur'aeni, 2012). However, measuring intelligence is especially challenging for children with special needs, especially children with visual impairments in Indonesia (Istiqomah, 2017). Consequently, many visually impaired children in Indonesia cannot receive appropriate intelligence measurements to design their future better as any other non-visually impaired children can.

Visually impaired children are they who have visual impairments because they have a limited visual system. These limitations are reduced visual acuity, difficulty perceiving images, reduced sensitivity, visual distortion, and field depth disturbances (Akbar & Yudhana, 2019). Most causes of visual impairment were uncorrected refractive errors (48.99%), cataracts (25.81%), and Age-related Macular Degeneration (AMD, 4.1%) (Ismandari, 2018). With limited visual experience, it may affect an individual's intelligence. One of the factors that influence intelligence is the environment (Nagpal et al., 2015). Therefore, it can be implied that there may be a difference in the results of intelligence measurements between visually impaired children and non-visually impaired children with the same measuring instrument.

Based on the report from the Indonesian Blind Association of Disabilities (Pertuni) (2017), 40% of the 3,750,000 visually impaired in Indonesia are visually impaired school age (6-18 years) children. This indeed isn't a small amount. Therefore, it is important to highlight the issues of appropriate cognitive measurement for visually impaired children.

Common tools used in Indonesia to measure intelligence of children is WISC-R. WISC-R consists of two subsections: Verbal (V) and Performance (P). Each subsection contains six subtests that have different indexes.

Although the WISC subtests use a lot of visual properties in stimulating behavioral samples to be measured like any other measuring instrument, the WISC-R advantage over other measuring tools is that the instrument's reliability has been approved by many parties, and its validity has been tested. WISC-R can explain the meaning specific to the intellectual function of each subtest, index scores, and Full-Scale IQ (Gregory, 2015). WISC-R produces three IQ scores: Verbal IQ, IQ Performance, and IQ Full-Scale or full-scale IQ.

ISSN 2614-7041 (online) | ISSN 2614-0403 (printed)

Table 1. WISC-R Index and Subtest Scores

Index Score	Verbal	Index Score	Performance
Verbal Comprehension Index (VCI)	Information	Perceptual Reasoning Index (PRI)	Picture Completion
	Comprehension		Picture Arrangement
	Similarities		Block Design
	Vocabulary		Object Assembly
Working Memory Index (WMI)	Digit Span	Processing Speed Design (PSI)	Coding
	Arithmetic		Mazes

Several research results show differences in intelligence levels of visually impaired children and non-visually impaired children. However, it has not explicitly been mapped in where and what areas to measure the weaknesses. Research with similar relevance is also conducted by Savira et al. (2019) which uses the research synthesis method to discuss the differences in children's intelligence between visually impaired children and non-visually impaired children. However, it has not yet accurately explained children's intelligence with visual disabilities because they do not use measuring instruments.

Currently in Indonesia there are yet any tools thet was specifically designed to measure visually impaired children's cognitive ability, this research was conducted to determine strength(s) and weakness(es) of visually impaired children in standard intelligence test. This research is pilot research in a series of study that attempts to develop intelligence measurement instruments for visually impaired children.

Method

The current study is a survey study with a quantitative approach and aims to compare the intelligence profiles of visually impaired children with non-visually impaired children to find their strength(s) and weakness(es). The subjects studied were ten children consisting of five visually impaired children s and five non-visually impaired children. The research instrument used is the Wechsler Intelligence Test for Children Revised (WISC-R) to measure intelligence on both visually impaired children as well as non-visually impaired children aged 6-16 years.

The WISC test is done manually by asking questions verbally by the tester. The testee was asked to answer questions that had been given, then the answers obtained will be analyzed according to the WISC-R manual (Wechsler, 1974). The score was then compared using Mann-Whitney U test.

Result and Discussion

Result

Table 2. Average Verbal IQ Rating of Each Group

Group		N	Mean Rank	Sum of Ranks
Verbal IQ	Visually impaired	5	4.30	21.50
	Non-Visually Impaired	5	6.70	33.50
	Total	10		

Although the average score of visually impaired children may seemed lower (Mean = 4.30) than the non-visually impaired children (Mean = 6.70), no significant difference was found (Mann-Whitney U = 6,50; $n_1 = n_2 = 5$; p > .05 two-tailed).

Table 3. Average WMI and VCI Ratings of Each Group

Group		N	Mean Rank	Sum of Ranks
WMI	Visually impaired	5	4.60	23.00
	Non-Visually Impaired	5	6.40	32.00
	Total	10		
VCI	Visually impaired	5	4.40	22.00
	Non-Visually Impaired	5	6.60	33.00
	Total	10		

Again, although the average score of visually impaired children may seemed lower on both WMI (Mean = 4.60) and VCI (Mean = 4.40) compared to non-visually impaired children (WMI = 6.40; VCI = 6.60), no significant difference was found (Mann-Whitney U = 8.00; $n_1 = n_2 = 5$; p > .05 two-tailed).

Table 4. Different Test for Each Verbal Subtest using Mann-Whitney U

	Information	Comprehension	Arithmetic	Similarities	Vocabulary	Digit Span
Mann-Whitney U	8.000	8.500	6.500	5.500	8.000	11.000
Z	-.946	-0.849	-1.273	-1.519	-0.955	-0.319
Asymp. Sig. (2-tailed)	0.344	0.396	0.203	0.129	0.340	0.750

In the performance subtest, visually impaired children are practically unable to perform, therefore no score can be obtained. Consequentially, Full-Scale IQ could not to be obtained for visually impaired children.

ISSN 2614-7041 (online) | ISSN 2614-0403 (printed)

Table 5. Comparison of Each Verbal Subtest per Group

Group		N	Mean Rank	Sum of Ranks
Information	Visually impaired	5	4.60	23.00
	Non-Visually Impaired	5	6.40	32.00
	Total	10		
Comprehension	Visually impaired	5	4.70	23.50
	Non-Visually Impaired	5	6.30	31.50
	Total	10		
Arithmetic	Visually impaired	5	4.30	2.50
	Non-Visually Impaired	5	6.70	33.50
	Total	10		
Similarities	Visually impaired	5	4.10	20.50
	Non-Visually Impaired	5	6.90	34.50
	Total	10		
Vocabulary	Visually impaired	5	4.60	23.00
	Non-Visually Impaired	5	6.40	32.00
	Total	10		
Digit Span	Visually impaired	5	5.80	29.00
	Non-Visually Impaired	5	5.20	26.00
	Total	10		

Discussion

The measurement results showed that visually impaired children have difficulties in performance subtest due to the heavy visual elements and materials on the subtest. Non-visually impaired children are able to perform well on the subtest. Further, Full-scale IQ result for visually impaired children could not be obtained.

However, there is no significant difference in verbal IQ between children with visual impairment and non-visually impaired children. This is in line with the study results from Savira et al. (2019), which underlines that having limitation in their visual ability does not affect the cognitive function of visually impaired children. However, it should be noted that developmental challenges and a lack of support in the learning process may affect cognitive ability of children with visual impairment (Poljan et al., 2020).

We also noticed that during testing, totally blind children have a more pronounced difficulties in similarities and arithmetic. This may be caused by each subtest requires a certain degree of visual experience that they did not have prior experience on. Experience such as seeing shape and color of objects to appropriately compare two objects, a crucial feature in the similarity subtest. Further, vignette question on the arithmetic subtest also noted as difficult due to it requiring a certain degree

ISSN 2614-7041 (online) | ISSN 2614-0403 (printed)

of imaging an object. However, despite the difficulties, no difference in similarities and arithmetic scores was found between visually impaired children with non-visually impaired children.

Further, in digit span sub-test, visually impaired children have slightly higher average compared to the non-visually impaired children. This may indicate that visually impaired children has stronger memory as noted by Chen et al. (2021) that visually impaired children show good WMI (Working Memory Index) because they are trained with listening habits in their daily activities where they rely more on their auditory to understand the world around them. Poljan et al. (2000) also noted that visually impaired children depend on their ability to process information, performance, and memory.

Conclusion

From the results of the study, it can be concluded that visually impaired children experience difficulties in performance subtest, as well as similarities and arithmetic subscales. Therefore, no full-scale IQ can be obtained for children with visual impairments. This finding indicates that WISC-R as the commonly used tools in Indonesia to measure intelligence in children is not appropriate to assess cognitive ability of visually impaired children due to the several limitations experienced by children with visual impairment. Thus, further research is needed to develop a measuring tool that is specifically designed for visually impaired children that can accommodate their difficulties.

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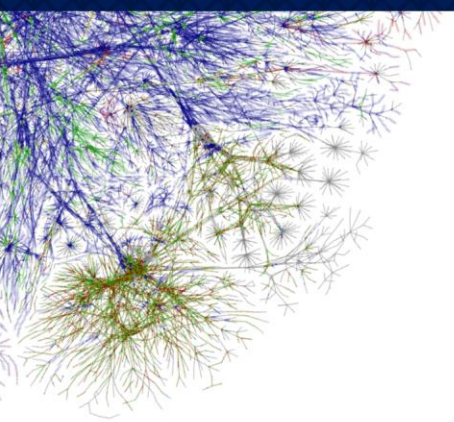
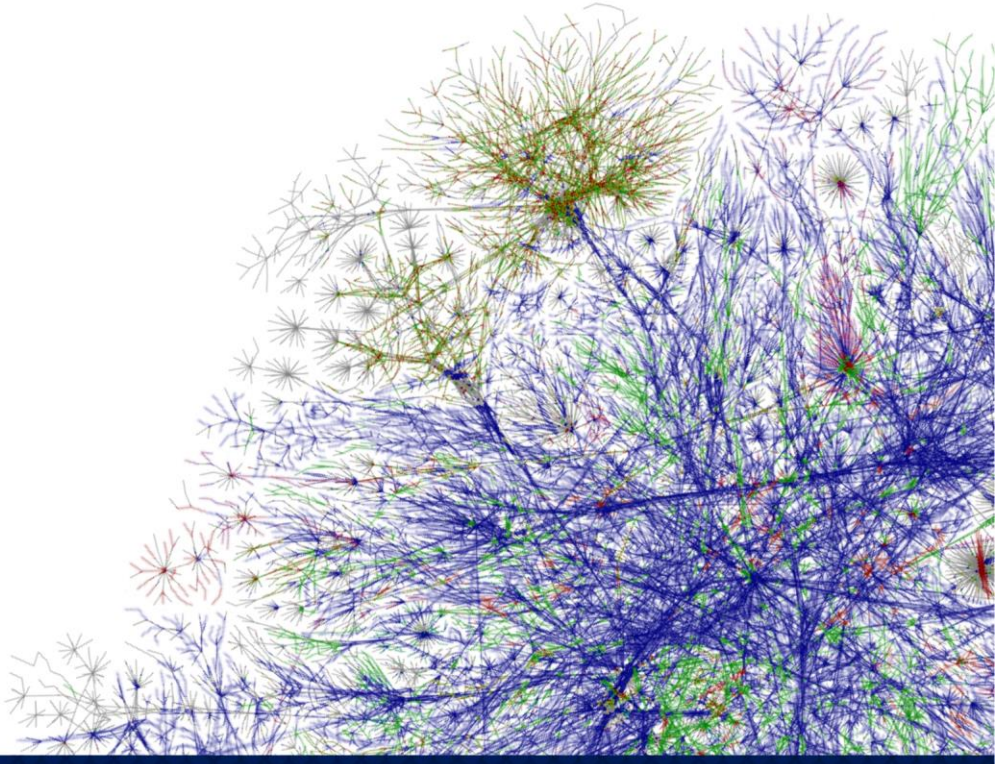
Subject Indexes





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