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RESEARCH ARTICLE

# Examining the Supervision Work Alliance Scale: A Rasch Model Approach

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**Abstract:**

***Background:***

The supervisory working alliance has a role in facilitating guidance and counseling supervisors in providing understanding of how the service works. Measuring the level of supervision work alliance is one way that can be done to find out whether a supervisor has a good supervisory work alliance or not.

***Objective:***

The research aims to describe the quality of the Supervision Work Alliance Scale (SWAS) instrument.

***Materials and Methods:***

The study employed a cross-sectional method with a quantitative research design. Participants in this study were counseling teachers implementing the internship program with 17 males and 55 females. This type of parameter needs to be identified by the category coefficient of the RASCH scoring function model for polycotomic responses.

***Results:***

The results show that as many as 34 items proved to be compatible with SWAS instruments. The cronbach alpha of the instrument was 0.91 which means that the all items were in the high category of reliability. The misfit items were only 5,88, so all of the items in SWAS were well understood by the participants.

***Conclusion:***

The development of SWAS instrument is valid and reliable, so it can be used to measure the variable of the supervisory work alliance

**Keywords:** Supervision work alliance, RASCH Model, Ability, Cronbach alpha, Coefficient, Guidance.

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|---|---|---|---|

## 1. INTRODUCTION

Working alliances in counseling and psychotherapy activities are a central construct that appears in the clinical supervision literature. This alliance is recognized for being significant in increasing the effectiveness of supervision activities. It is carried out between the client and the therapist in a counseling or therapy activity, which plays a crucial role in facilitating the process. Even the changes that occur in the client are a function of developing a solid working alliance rather than the theory or technique used by the therapist [1].

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The supervisory alliance can be said to be strong when the supervisor and clients can reach a mutual agreement about the purpose of supervision implementation. The deal will make the supervisory relationship less tense. The implementation of supervision can be achieved optimally, and participants can get new experiences that can foster their professional performance.

Supervision can be adequate when participants, in this case, the counselor, can be competent. Bernard and Goodyear (2014) say that increasing participants' competence through supervision is necessary because their abilities will not improve if there is no identification and assessment of their professional activities [2]. Supervision needs to be done by paying attention to the thoughts, feelings, actions, and ideas expressed or combining these [3].

A study conducted by McCarthy in 2013 discussed the relationship between supervisory work alliances and the results of rehabilitation counseling. This study then directs supervisors to build a strong working alliance relationship with the participants, in this case, the counselor. Also, regular contact is made so that it will create a healthy working alliance. A code of conduct is applied to provide experience between supervisor and client. This study indicates that the supervisory work alliance has a positive relationship with the results of rehabilitation counseling. Therefore, a work alliance is an activity that needs to be formed to improve the counselor's ability to conduct counseling [4]

Another study conducted by Parcover and Swanson in 2013 discussed the supervisory work alliance's role in the implementation of career counseling carried out by participants, in this case, the counselor. The research was conducted to understand the effect of the supervisory work alliance in the supervision of career counselors, which was carried out using the case study research method. The results showed that the supervisory work alliance impacted the activity's beginning before the participants carried out the counseling. Also, the supervision achieves good results and awareness of differences in the ability to be internalized by participants so that it fosters the desire to learn more about competent counselors [5]

The studies mentioned are just a few of the research results that have positively impacted the supervision work alliance. Through the work alliance, the counselor's supervision will help support the running of guidance and counseling services [6]. Counselors need to have optimal skills to understand and follow the provisions in carrying out their professional activities [7]. Frank and Gunderson (1990) said that counselors who have the right alliances are predicted to have a better retention rate and better service outcomes than counselors who do not have a supervisory work alliance [8].

Therefore, identifying supervisory work alliances is worthwhile. The identification results will provide interventions so that the counselor has better potential and offers higher quality guidance and counseling services [9]. Accuracy in delivering interventions will also provide answers to solutions to the problems faced so that the counselor's satisfaction in providing services will be achieved

The research discussed in this article is about the formulation of a scaling instrument for the supervisory work alliance named the Supervision Work Alliance Scale (SWAS). The purpose of this research is to describe the quality of SWAS to measure the supervision work alliance. The instruments tested will produce accurate data about the conditions in the field to provide the proper intervention.

In this research, Rasch Model is used to analyze the results of the instrument. The Rasch model has the advantage of producing a measurement scale with the same interval to provide accurate information about the participants and the quality of the work [10,11]. The model offers advantages, including (1) providing a linear scale with the same interval, (2) being able to predict missing data, (3) being able to provide a more accurate estimate/estimation, (4) being able to detect model inaccuracy, (5) and provide replicable measurements. SWAS will be analyzed by looking for unidimensionality, wright maps, item analysis, ability analysis, and instrument analysis.

## 2. METHODS

The research employed a quantitative approach using a cross-sectional research design. The sampling technique was carried out using random sampling techniques considering the sample being adjusted to the research subject. The data obtained were analyzed using the RASCH model. The application used to analyze the RASCH model was WINSTEP version 3.92.0.

### 2.1. Population and Research Samples

The research subjects were the guidance and counseling teachers in schools implementing the internship program of guidance and counseling, totaling 72 people. The following is a table of research samples:

**Table 1. Research sample.**

| Gender | Amount |
|---|---|
| Male | 17 |
| Female | 55 |
| Total | 72 |

Based on Table **1**, 72 people participated in this study consisting of 55 females and 17 males.

### 2.2. Research Variable

The research uses unidimensionality variables, wright map analysis, item analysis, stability analysis, and analysis of the instruments in the output table on the WINSTEP application.

## 3. RESULTS

### 3.1. Unidimensionality

Unindimensionality can be seen by looking at the output Table **2** on WINSTEP. Unidimensionality of measurement can be proven if raw variance is explained by measures ≥ 20% (Note: the general criteria for interpretation are: enough if 20-40%, good if 40-60%, and excellent if above 60%) and if the unexplained variance in 1st to fifth contrast of residuals <15% each [12]. The following Table **2** describes the unidimensionality:

**Table 2. Standardized residual variance.**

| Empirical | Modeled | | |
|---|---|---|---|
| Total raw variance in observations | 70,2 | 100% | 100% |
| Raw variance explained by measures | 36,2 | 51,6% | 51,6% |
| Raw variance explained by persons | 8,2 | 11,6% | 11,6% |
| Raw variance explained by items | 28,0 | 39,9% | 39,8% |
| Raw unexplained variance (total) | 34,0 | 48,4% | 100% |
| Unexplained variance in 1st contrast | 11,2 | 16% | 33,1% |
| Unexplained variance in 2nd contrast | 2,9 | 4,1% | 8,4% |
| Unexplained variance in 3rd contrast | 2,0 | 2,8% | 5,8% |
| Unexplained variance in 4th contrast | 1,8 | 2,6% | 5,4% |
| Unexplained variance in 5th contrast | 1,4 | 2,0% | 4,1% |

Table **2** shows the results of the analysis regarding the unidimensionality of the instrument. Data analysis showed that the raw variance explained by measures was 51.6%. Meanwhile, the unexplained variance in 1st to 5th contrast of residuals was 16.0%, 4.1%, 2.8%, 2.6%, and 2.0%, respectively. It appears that unexplained variance in second contrast to unexplained variance in fifth contrast can measure the SWAS variable. In contrast, the unexplained variance in the first contrast is 16.0% which means it cannot measure one variable of the supervision work alliance scale.

### 3.2. Wright Map Analysis

The Wright Map Analysis, shown in the output Table **1**, states that the supervisory work alliance's scale map spreads in the -2 to 4 logit range. The position of the participants' ability is at -1SD and + 3SD. Based on the supervisory work alliance's scale map and the participant's knowledge, 3 participants have outlier abilities. The three participants have higher abilities than the scale map of the supervision work alliance. Output Table **7**, which measures participants' ability, and output Table **3**, which measures the item, state that the participants' average ability is 0.25 and the average logit item is 0.00. These results show that the supervisory work alliance's average scale is above the average difficulty level of the standard items [13].

### 3.3. Item Analysis

Item analysis was carried out by measuring the item difficulty level, suitability level, diagnostic rating scale, and bias detection. Measurement of the first item is carried out to determine the level of difficulty of each item. The output of Table **1** states that the SD value is 0.63. If this value is combined with a logit average value of 0.0, then item difficulty level can be categorized as follows:

**Table 3. Difficulty level category.**

| Range | Category |
|---|---|
| > 0,63 | Hard |
| 0,00 - 0,63 | Difficult |
| -0,63 - -0,01 | Easy |
| < -0,63 | Very easy |

Based on Table **3**, the 13 items can be classified based on the item difficulty level category. Following are the items based on the level of difficulty (Table **4**).

**Table 4. Item classification based on the level of difficulty.**

| Category | Number of Items |
|---|---|
| Hard | 22, 33, 24, 21, 25, 34, 30, 23 |
| Difficult | 31, 28, 12, 26, 19, 27, 20 |
| Easy | 5, 11, 6, 32, 13, 29, 15, 16, 18, 9, 14, 2, 7, 10 |
| Very Easy | 17, 4, 3, 8, 1 |

The following item analysis is about the item suitability analysis. The research is carried out to identify the function of the item, whether it is functioning normally or not when the measurement is taken. The normal function of the items will give participants an appropriate conception of the item items. The analysis was carried out using Table **4** about the fit order items.

The analysis was carried out by observing the column mean square OUTFIT (MNSQ), OUTFIT Z-Standard (ZSTD), and Point Measure Correlation (PT MEASURE CORR). Boone (2014) stated that to identify the mismatch of items, some standards need to be considered: (1) MNSQ OUTFIT value is more significant than 0.5 and less than 1.5, and the closer to 1, the better; (2) ZSTD OUTFIT value is greater than -2.0 and smaller than +2.0, and the closer to 0 the better; and (3) the value of PT MEASURE CORR is more than 0.4 and less than 0.85. An item can be considered fit if it meets at least 1 of the three criteria [14].

Based on this data, items that can be said to be inappropriate or misfit are described in Table **5**. The following are items that can be said to be inappropriate or misfit.

The following item analysis is about the item suitability analysis. This analysis is carried out to identify the function of the item during the measurement. The normal function of the items will give participants an appropriate conception of the items. The analysis was performed using Table **4** about the item fit order.

Based on these data, wrong items or misfits can be described in Table **5**.

**Table 5. Misfit items.**

| Criteria | | Misfit Item |
|---|---|---|
| OUTFIT MNSQ Value | 0,5 > x > 1,5 | 34, 5 |
| OUTFIT ZSTD Value | -2,0 > x > 2,0 | 34, 28, 12, 5, 11, 13, 16, 9, 7. |
| PT MEASURE CORR | 0,4 > x > 0,85 | 34, 12, 5, 11, 1 |

If it is noted in Table **5**, there are two items for which none of the criteria are met, namely numbers 34 and 5. The participants do not adequately understand the two items do not measure the supervision work alliance scale. However, the other 32 items can be suitable or fit because the average item meets at least one predetermined criterion. Therefore, 32 items are well understood and can be used to measure the supervisory work alliance scale.

The following item analysis is the diagnostic rating scale. The analysis was carried out to diagnose whether the participants understood each answer's difference or not [14]. Output (Table **3**) regarding the rating (partial credit) scale is used to analyze the diagnostic rating scale. The ANDRICH THRESHOLD value in the output of Table **3** must show suitability and the same increase in alternative answers 1, 2, 3, 4, 5, 6, and 7 [15]. Following is the Andrich Threshold value, as described in Table **6**.

**Table 6. Andrich threshold.**

| Item | Value |
|---|---|
| 1 | None |
| 2 | -0,74 |
| 3 | -0,33 |
| 4 | -1,12 |
| 5 | 0,46 |
| 6 | 0,21 |
| 7 | 1,51 |

The Andrich Threshold value in Table **6** shows a discrepancy and does not increase in alternative answers 4 and 6. Thus, the differences in answer choices 1, 2, 3, 5, and 7 can be understood by the participants, while the participants cannot understand answer choices 4 and 6.

The following item analysis is item bias detection. A validity measure ensures that the instruments and items used do not contain bias or favor specific individuals. Item bias was detected using the output (Table **4**) by looking at the probability of the things. An item is biased if the probability value of an item is below 0.5 [16]. The item bias in this analysis was based on gender.

The results of the bias analysis based on gender showed that there were 4 bias items, namely the number 17 (p = 0.0476), 24 (p = 0.0456), 29 (p = 0.0180), and 32 (0.0060). Items 17, 29, and 32 are more favorable for male participants, and item number 24 is more beneficial for female participants

### 3.4. Ability Analysis

This analysis was conducted to determine each participant's ability and the level of conformity of the results with the participant's ability. The output table used in performing the ability analysis is output (Table **7**) regarding person measures and output (Table **6**) regarding person fit orders.

The analysis of participant ability was carried out by looking at the SD and the average in the output Table 17. The SD and mean values were 0.62 and 0.25. The two values are combined to obtain the participant's ability category [17]. Table **7** is the result of a combination of SD and average values. The following is Table **7** regarding the categories of participant ability:

**Table 7. Participants ability category.**

| Range | Category |
|---|---|
| > 0,87 | High |
| -0,37 - 0,87 | Medium |
| < -0,37 | Low |

Based on the value of each participant and considering Table **7** regarding the category of participant's level of ability, it is found that there are 4 participants in the high ability category, 62 participants in the moderate ability category, and 6 participants in the low ability category.

Analysis of the results' suitability with the participant's ability was carried out by looking at the output Table **6** regarding the person fit to order. The analysis was carried out by looking at the OUTFIT Mean Squire (MNSQ) column, OUTFIT Z-standard (ZSTD), and Point Measure Correlation (PT MEASURE CORR). Boone (2014) states that there are criteria to determine the suitability of the results with the participant's ability: (1) MNSQ OUTFIT value is more significant than 0.5 but smaller than 1.5 and the closer to 1, the better; (2) ZSTD OUTFIT value greater than -2.0 and smaller than +2.0, and the closer to 0 the better; and (3) the value of PT MEASURE CORR is more than 0.4 and less than 0.85. A participant can be considered fit if it meets at least 1 of the three criteria [14].

Based on these criteria, it is known that 69 participants were declared fit in the sense of providing answers according to their level of ability. Meanwhile, the other 3 gave answers that were not according to their level of ability.

### 3.5. Instrument Analysis

Instrument analysis is also carried out by paying attention to output (Table **8**) regarding summary statistics. Table **8** describes the mean value, SD, separation, reliability, and Cronbach alpha. The following is Table **8**, which is used to analyze the instrument:

**Table 8. Statistic summary.**

| - | M | SD | Sp | R | CA |
|---|---|---|---|---|---|
| **P** | 0,25 | 0,62 | 3,01 | 0,90 | 0,91 |
| **I** | 0,00 | 0,63 | 6,03 | 0,97 | |

P = Person I = Item M= Mean
SD = Standar Deviation SP = Separation R = Reabilitas CA = Cronbach Alpha

Based on Table **8**, the results obtained showed the participants and items' ability, interactions between participants and items, and reliability. The participants' average ability, which was 0.25, and the average of the items, which was 0.00, indicated that the participants' ability was higher than the items' difficulty. The Cronbach alpha item's value was 0.91, which meant that it was in the perfect category. The participants' Cronbach alpha value was 0.90, which meant that the participants' answers' consistency was included in the ideal category. Simultaneously, the item reliability was 0.97, which meant that the items' quality was included in the special category [18].

From the output of Table **8**, it is known that the separation for a person is 3.01, and for items, it is 6.03. The greater the separation value, the better the overall quality of the person and instruments. The separation value is calculated more carefully using the following formula: H = {(4 x separation) + 1} / 3 [19]. Thus, the separation value for persons is 4.34 rounded to 4, while the separation for items is 8.37 rounded to 8. It implies that the quality of research participants is perfect, and the instruments' quality is of special quality [20].

Other data in Table **8** that can be used are INFIT MNSQ and OUTFIT MNSQ, both in the Person table and the Item table [14]. Based on the Person Table, it is known that the average MNSQ INFIT and MNSQ OUTFIT values are 1.05 and 1.01, respectively. Meanwhile, based on the Item Table, it is known that the average MNSQ INFIT and MNSQ OUTFIT values are 0.98 and 1.01, respectively. The closer the criteria are to number 1, the better because the ideal value is 1. Thus, the average person and item approach the ideal criteria.

Meanwhile, to INFIT ZSTD and OUTFIT ZSTD, the average scores for a person are -0.20 and -0.20, respectively. Meanwhile, the INFIT ZSTD and ZSTD OUTFIT values for items are -0.20 and -0.10, respectively. The ideal value of ZSTD is 0, and the closer to 0, the better. Thus it can be said that the quality of the person and item is acceptable.

Regarding information about the results of the measurement focus, it can be illustrated in the following Figure:

Based on Fig. (**1**), the information function test curve shows that the item separation has a high value [16]. Thus, 34 items given to 72 participants indicated that they were suitable for determining the supervision alliance scale.

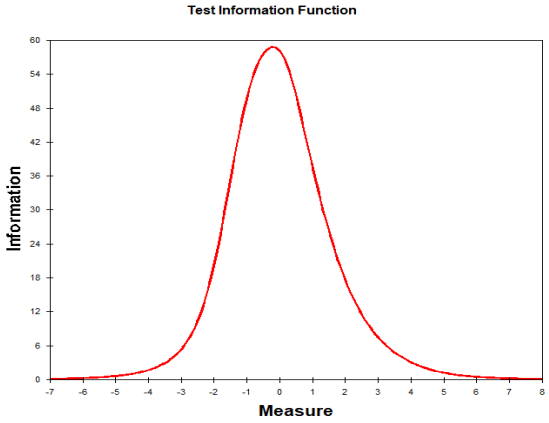


**Fig (1).** Test information function.

## 4. DISCUSSION

The supervisory work alliance scale is one instrument that can be used to determine the supervisory work alliance's quality for supervisors and guidance and counseling teachers [21]. The results of the measurements carried out provide notes to improve the instrument to obtain better results.

The analysis of instrument items indicates that it is necessary to carry out several evaluations to obtain an instrument with items that can measure the supervisory work alliance scale. Unidimensionality analysis shows that the scale of the supervisory work alliance still cannot measure the overall variable. The first contrast consistently exceeds the measurement limit in unexplained variance, so it cannot measure one variable in the supervisory work alliance scale [12,18]. Furthermore, two items, namely 34 and 5, and alternative answers 4 and 6 need to be improved. It was done because the participants could not understand that it was fine not to obtain optimal results. The habits in items are also found in items 17, 24, 29, and 32. These habits will impact certain groups' benefits so that these items will produce unfair values to other groups [22].

The results of the participant ability analysis showed that 62 participants were in the moderate category. It indicates that the high quality in a supervisory work alliance is still not wholly owned. Healthy relationships need to be formed through training activities [23,24]. Facilitating learning by providing space to express anxieties, monitoring the counseling process, and so on will give a stimulus to participants to get a healthy relationship in the supervisory work alliance [25]. Although bonding between trainees and supervisors will be seen as the primary key, the trainees' characteristics that stand out will help form a healthy relationship in the supervisory work alliance [26]. Participants' attachment also needs to be a concern in training by paying attention to personality, relationships, and work behavior [27 - 30].

The results of instrument reliability get outstanding results. The reliability of the supervisory work alliance scale instrument is in a special category [18]. The SWAS instrument will give consistent results if the measurement is carried out more than once [31]. Consistent results will provide confidence in the results presented from the SWAS instrument. Reliable results will lead to further action according to the identified needs [32].

## CONCLUSION

The analysis results show that the SWAS instrument is still unable to measure the supervisory work alliance variable and several items need to be corrected. There is also a bias in several item questions that need to be addressed. Unidimensionality analysis shows that the instrument is still unable to measure the supervision work alliance variable as a whole because there are results that exceed the predetermined measurement standards.

Meanwhile, the reliability of the instrument is in a special category. The instrument provides the right consistency when the instrument is tested more than once, so the results will not differ from the previous results. Therefore, the results obtained will lead to each participant's objective conditions, and the supervisory work alliance scale can be used to measure the supervision work alliance.

## ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This study was approved by Indonesia Guidance and Counseling Association (ABKIN) Jawa Barat, Indonesia under approval no. 05/ABKIN Jabar/04/2020.

## HUMAN AND ANIMAL RIGHTS

No Animals were used in this research. All human research procedures followed were in accordance with the ethical standards of the committee responsible for human experimentation (institutional and national), and with the Helsinki Declaration of 1975, as revised in 2013.

## CONSENT FOR PUBLICATION

Informed consent is obtained from all participants when they are registered.

## AVAILABILITY OF DATA AND MATERIALS

Data should be shared upon request with the relevant author [D.S] upon a reasonable request.

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## CONFLICT OF INTEREST

There is no conflict of interest.

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