The comparative effect of internet-based cognitive behavioral counseling versus face to face cognitive behavioral counseling in terms of student’s resilience

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The comparative effect of internet-based cognitive behavioral counseling versus face to face cognitive behavioral counseling in terms of student’s resilience

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Abstract: This randomized, controlled trial experimental study aimed at comparing the effect of cognitive behavioral counseling between online (Internet-based) and more traditional face-to-face counseling methods. The study is based on 90 students of second-grade level, in junior high schools in Buleleng Regency, Bali, Indonesia, who were invited to be participants of this study. Each participant was assigned randomly into three groups with different conditions; 30 students followed a traditional eight, 55-minute cognitive behavioral group counseling track (face to face counseling); 30 students followed Internet-based cognitive behavioral counseling; and 30 students were in a “waiting-list” control category. The data was gathered by using the 14 items Indonesian version of the psychological subscale, Resilience Youth Development Module, Junior High School. The data was then

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This collaborative research between the three authors is a beginning develops of information technology products in counseling. All the authors have contributed their best efforts to the research process and preparation of this research paper.

PUBLIC INTEREST STATEMENT
The Industrial Revolution 4.0 is characterized by the dominance of information communication technology in much of human life. We cannot deny that information and communication technology in the education process provides many advantages and efficiencies. School counselors in Indonesia have the challenge of helping students with efficiency. Internet-based counseling is a new method in the practice of Indonesian school counseling and needs to be examined for its effectiveness and feasibility. This experimental paper compares the effectiveness of Internet-based counseling versus the more traditional face-to-face method. We preferred to use the Cognitive Behavioral counseling model in both counseling methods. The article discusses the obstacles and advantages found in internet-based counseling. The results provide an important contribution as an initial starting point for policy formulation in developing countries like Indonesia, in regards to the use of the Internet in the counseling process in higher education at school. The authors listed in this manuscript declare the absence of any conflict of interest on the subject matter or material discussed.
analyzed using the Repeated Measures ANOVA. The results of this study show that:
(1) the students’ resilience in attending both counseling groups was significantly increasing from pretest to posttest, and included evaluation in follow up testing; (2) after all counseling sessions, and five weeks after counseling the students in both groups, data indicates a higher resilience than the waiting-list control group; and (3) there was no significant difference in the effectiveness of internet-based cognitive behavioral counseling and face-to-face. The result of this study is discussed in the framework of the online method of counseling, to promote the students’ mental health and resilience.

Subjects: Computer Science; Counseling Psychology; Developmental Psychology; Educational Psychology; School Psychology; Education; Educational Research; Child Development; Counselling

Keywords: resiliency; school counseling; cognitive behavioral counseling; web-based CBT; Indonesia; cyber counseling

Resilience is the ability to succeed by adapting well and bouncing back from adversity and situations that pose mental pressure and therefore threaten optimal develop in a person (Bernard, 2004; Rutter, 2012; Yates et al., 2015). Individuals who have high resilience can quickly rise from misery or frustration and avoid emotional problems.

Every student needs to develop resilience as a personal capacity to achieve good academic outcomes, which then can be applied in life. Students with high resilience can learn well, play well, socialize well, and have positive expectations for the future (Suranata, 2015; Suranata et al., 2017). There are some prominent abilities a person with resilience demonstrates (Bernard, 2004), namely: (1) good social skills; able to communicate; cooperation and showing empathy to others, (2) have high self-efficacy and self-esteem, (3) able to realize their thoughts, feelings (emotions) and control of their behavior, (4) able to organize and manage a plan, strategy, and having ideas about problem-solving, (5) having creativity for finding resources outside themselves in order to overcome the difficulties, problems or psychological pressure, and (6) also being able to have a clear plan to realize their personal strengths in life.

The recent School Guidance and Counseling endeavors focus on accessing quality information for students, providing personal help to integrate life, study and work, and to nurture students as individuals, professionals, and resilient citizens (American School Counselor Association, 2003; Indonesian Association of Guidance and Counseling, 2007). School counselors need training and development to apply various strategies, methods, and types of media within school counseling services. Furthermore, these acquired skills should include the utilization of information and communication technology such as internet-based counseling.

Cognitive-behavioral counseling finds extensive evidence from large and vigorous studies on effective counseling models. These models are twofold in their goals: to overcome students psychological problems, and to couple the counseling to improved competencies needed for success academic and life (Suranata et al., 2017a). The cognitive behavioral counseling model has been widely used as an intervention to promote students’ mental health, including resilience development (Reavley et al., 2015).

Currently, methods in conducting cognitive behavioral counseling models have been rising. One of the innovative methods in using counseling models is Internet-based. This rise in internet-based methodologies is founded on previous studies’ strong evidence that Internet-based cognitive behavioral counseling (or psychotherapy) has equivalent effects with face-to-face (conventional) cognitive behavioral counseling. In a particularly interesting case, “Cost-effectiveness” was
The use of information and communication technology (ICT) is a new method of implementing school counseling (Hidayah, 2015). In the context of Indonesia, the Internet-based school counseling program has not been optimally utilized in schools. The potential advantage of this ITC method could be substantial, fewer counselors engaged in quality programs, while realizing cost and time efficiency when compared to conventional counseling (Hedman et al., 2011, 2014, 2012).

Today, under the policies of Indonesia’s school guidance and counseling, the school counselor is required to handle 150 students per week. This aggressive policy goal would be much more achievable if the school counselors applied ICT methodology to assist in their tasks. By using Internet-based counseling, school counselors could provide counseling services anytime and anywhere by applying the provided online systems (Andersson et al., 2014). If school counselors used Internet-based counseling, it will certainly facilitate the goal achievements desired by schools. This ICT approach can assist schools in overcoming the limited time and availability of school counselor personnel.

Today, students have remarkable technology literacy, across multiple “accessing” devices, which they employ in communicating via smart phones, laptops, desktops and other computers devices connected to the Internet. Because the number of school counselors is limited to that number of students who are directly mentored, an imbalance occurs between demand and available counseling. It is a hard fact that the number of students exceeds the available number of school counselors, and therefore, displays the face-to-face counseling method is as being less effective.

There is a tendency, currently, in students feeling more comfortable if counseling is not directly done face to face (Hidayah, 2015). The ICT approach to counseling is not without challenges: the availability of adequate facilities, and reliable, fast networking must absolutely be addressed if internet-based counseling is to be utilized. Another important challenge to be studied is the absence of policies that regulate the use of online counseling methods in schools in Indonesia, and the ability of school counselors to facilitate online counseling methods in Indonesia is still weak (Triyanto, 2010).

As a new method, the effectiveness of internet-based cognitive behavioral counseling needs to be investigated. From the above statements, the core question is “can Internet-based counseling methods give equivalent results with face-to-face methods of counseling”?

This study aims to examine the effectiveness of face-to-face cognitive behavioral group counseling and Internet-based cognitive behavioral counseling to improve the resilience of junior high school students. The main hypothesis in this study are: (1) there are statistically significant increases of resilience in students of the cognitive behavioral group counseling; (2) there are statistically significant increases of resilience in students’ of the internet-based cognitive behavioral counseling; (3) there are statistically significant differences of resilience between the students in cognitive behavioral counseling groups, Internet-based cognitive behavioral counseling and waiting-list control groups; (4) the resilience of students in cognitive behavioral group counseling is higher than the resilience of the waiting-list control group; (5) the resilience of participants in Internet-based cognitive behavioral counseling is higher than students in the waiting-list control group, and; (6) the resilience of students in Internet-based cognitive behavioral counseling is higher than students in cognitive behavioral group counseling.
1. Method

1.1. Participants
This study involved students of grade VII (M = 12 years) in SMP Negeri 2 Kubutambahan and in SMP Negeri 3 Singaraja, Buleleng Regency, Bali, Indonesia, for academic years of 2017/2018. In total, there were 308 students who followed the pretest of resilience measurement, of which 102 students were measured in low or moderate resilience categories (score ≤ 42). A total of 90 students were then placed randomly into face-to-face cognitive behavioral counseling (n = 30), Internet-based cognitive behavioral counseling (n = 30) and the waiting-list control group (n = 30).

Six school counselors were invited to be counseling facilitators for treatment in this study. Two school counselors with experience operated the Internet-based cognitive behavioral counseling while the remaining four was to hold the face-to-face cognitive behavioral group counseling. In fact, in the present study, all school counselors have already attended a short training seminar concerning cognitive behavioral counseling procedures in both face-to-face and Internet-based counseling.

1.2. Assessments and measures
In this study, resilience is defined as student’s ability to adapt positively towards difficulties or challenges in such a manner as to succeed in academic endeavors and in life. According to Bernard (2004) the framework of resilience theory is usually employed to describe resilience competence. The data resilience was gathered using student’s self-reporting on a resilience scale. The participant’s respond to the scale by selecting one of four response alternatives to each question, namely inappropriate (TS); less appropriate (KS); sufficiently appropriate (CS); and very appropriate (SS). Each item is scored 1 for a TS response, 2 for KS, 3 for CS and 4 for SS. If the score was greater than 3 (x > 3), the student would be high resilience, if the student was more than 2 and less than or equal to 3 (≤ 3 x > 2), that student would be scaled as average, and less than or equal to 2 (x ≤ 2) students were categorized as low resilience (Constantine & Benard, 2001).

The resilience scale used on this study is the Indonesian version of psychological subscale of Resilience Youth Development Module (RYDM) for junior high school (Suranata et al., 2017b). The good of psycometric propserties of the original version RYDM was reported by study Hanson and Kim (2007). The validation factors of the Indonesian version of the scale was supported by Suranata, et. al., with a medium loading factor (0.5). From the 18 items, there were 14 items produced that adequately assess the five dimensions of resilience, namely; social skills, self-efficacy, problem solving, self-awareness, and aspiration goals. The Alpha Cronbach’s reliability test is 0.777, and is considered adequate in reliability (Saranata et al., 2017b).

The student participants’ in the Internet-based cognitive behavioral counseling take the measurements by electronic scale; whereas the participants in face to face counseling and waiting list control groups were by paper and pencil-based scale. The measurement was conducted in three stages, before counseling (pre-test), immediately after counseling (post-test) and 5 weeks after counseling was terminated as a follow-up test.

1.3. Procedures
This experimental study was conducted using randomized control trial design. The multistage random sampling method was used to select and assign participant in the groups. The first step selects students who meet the criteria of having low and medium resilience. The next stage places students who meet these criteria with a random assignment procedure. There are two experimental groups and one control group. The first experimental group is the face-to-face cognitive behavioral counseling; the second is the Internet-based cognitive behavioral counseling group. The students in waiting-list control group did not receive any counseling during the study. During the education semester following this research program the waiting-list students shall choose one of
the counseling methods: Internet-based or face-to-face counseling. The recruitment and retention of participants in this study is shown in Figure 1.

1.4. The face-to-face cognitive behavioral counseling procedures
The face-to-face cognitive behavioral counseling was implemented in the three groups. Each group consisted of 10 number of students and facilitated by a different school counselor. The cognitive-behavioral group counseling procedures (face-to-face) resembled the group psycho-education. Counseling is conducted every week, for 8 x 55-minute counseling session for each group. Overall, 2 months are required by each group to complete all counseling sessions.
Cognitive behavioral group counseling was conducted by integrating the cognitive technique with rational emotive and behavioral techniques that were done in group counseling methods (Hofmann et al., 2012; Joyce-Beaulieu & Sulkowski, 2015). Counseling protocols were used based on cognitive-behavior within groups in the school context (Joyce-Beaulieu & Sulkowski, 2015). Cognitive-behavioral counseling was carried out by teaching the students to change their cognitive distortion, affected the appearance of disturbed feelings and behaviors. These behavioral changes resulted in a cognitive scheme of better feelings and healthier behaviors (A. Beck, 1979; J. S. Beck, 2011). The cognitive restructuring technique applied involved the analysis of self-talk and ABCs training (Ellis, 1962). The behavioral strategies applied were: social skill training, relaxation training, problem-solving training, and assertive training.

1.5. Internet-based cognitive behavioral counseling

The Internet-based cognitive-behavioral counseling can be described as online psycho-educational contacts between students and counselors through online facilitation. The same techniques formulation were used in the Internet-based cognitive behavioral and face-to-face. The technique formulation applies integrating the cognitive technique, rational emotive, and behavioral techniques as explain in the previous section.

The procedure of Internet-based cognitive behavioral counseling preferred was by individual format, and implemented by online modules of counseling. Each student participant Internet-based cognitive behavioral counseling obtained a personal account for access into the system. The contact between counselor and student mainly takes place in a non-direct time. The frequency of students counseling in the Internet-based cognitive behavioral counseling is unlimited, in accordance with the outcome of initial assessment and by counselor evaluation during the counseling process. Each student was allowed to have a different frequency access, and counseling, on a weekly basis.

The procedures for students to participate in Internet-based cognitive behavioral counseling in this study was held in 10 steps, namely: (1) students entering with privacy account to the Internet-based cognitive-behavioral counseling system, (2) the students take their resilience assessment online (pretest), (3) based on their resilience profile of assessment results, students are directed to part of cognitive-behavioral counseling modules (available in the system), (4) the students follow the instructions for behavior change counseling techniques, (5) students themselves do the evaluation of technique implementation by filling-out the form provided in each module section; they may send messages to a school counselor via e-mail, (6) the students wait for responses from the counselor, (7) based on the counselor’s evaluation and recommendation, students may continue to the next module or they may repeat their current module, (8) based on school counselor evaluation, successfully rated students who have followed all the modules might be terminated and thereafter then continue to take a second resilience assessment (post-test), and (9) following a period of 5 weeks from counseling termination, students conducted their third resilience assessment online (follow-up test).

In this study, there were two counselors who operated Internet-based counseling. Each school counselor mentored 15 students. The role of counselors in the Internet-based cognitive behavioral counseling method were: to operate the system, to evaluate the results of the student’s implementation of counseling techniques based on parts of the module, and respond to student’s messages. The school counselor’s procedure in Internet-based cognitive behavioral counseling (in most recent studies) is the following: (1) providing accounts for students and inviting students to access the online counseling system, (2) verifying student activities in the system, (3) evaluating student counseling techniques implemented on each module section, (4) giving recommendations and rewards to each student, and (5) if needed, the school counselor may send a message to the student’s account or e-mail.

1.6. Data analysis

The data related to the counseling process in each method (Internet-based and face-to-face) is reported in a narrative. Included is the length of time required for each method of counseling,
barriers and benefits which were encountered by both students and school counselors (by method), as well as other matters in the counseling process.

The General Linear Model Repeated Measures Analysis of Variance (GLM RM-ANOVA) was used to examine the hypothesis. The analysis data on this study is performed by SPSS program for windows V. 22.

The analysis involved three group factors, and also included three factors of time measurement. The group factors are face-to-face cognitive behavioral group counseling, Internet-based cognitive behavioral counseling, and the waiting-list control group. The time factors measurements are pretest, posttest, and follow-up test.

The main effect of time, group and interaction effects between time and groups were evaluated by using Sphericity Assumed test, and additionally had Mauchly's Sphericity test taken into account. The effect size on partial eta square ($\eta^2$ partial) effects was reported on each effect and each factor of the testing. The value in $\eta^2$partial indicate the proportion of total variables caused by the factor (Brown, 2001). The Bonferroni test was used to evaluate the comparisons of mean resilience between groups, in all measurement times.

2. Results

2.1. The description of counseling process

The results of a this study show that the Internet-based cognitive behavioral process took less time and less counselor effort than the face to face, but it did not take into account measurements of cost effectiveness. The time was required to complete all counseling sessions for each group of face to face method lasted for 2 months or 8 x 55-minutes sessions and facilitating by 4 school counselors. There were not significant constraints reported in the implementation of face-to-face counseling. The school counselors’ suggested that the Internet-based cognitive behavioral counseling was perceived to be a more expensive method, and required a higher inclined cost.

The time that was required for Internet-based cognitive behavioral counseling processes varied with each student. The fastest time required by the student to complete the counseling session was 3 weeks (the frequency 10 times of access, the average time spent for every session was ± 30 minutes). While the longest time required was five weeks. The frequency 12 times of access, the average time spent every session by student was ± 30 minutes.

School counselors and students in Internet-based cognitive behavioral counseling reported that Internet network were a major obstacle during the counseling process. Despite being trained briefly in the framework of this study, school counselors who operated the Internet-based cognitive behavioral counseling in the recent study reported some difficulties in the operating systems.
caused by a server. The limitations of internet-equipped computer facilities that students had and the high cost (buy internet quota) that students needed for each counseling session were also mentioned to be an obstacle in this process.

### 2.2. Student Resilience Perform

The stable and significant improvement of resilience scores by the students in cognitive behavioral group counseling and Internet-based cognitive behavioral is given in Table 1. As it can be observed, the mean resilience score in the Internet-based cognitive behavioral counseling is increasing 16 from pretest to posttest, 18.16 from pre-test to follow-up, and 2.16 from posttest to follow-up by each stage of measurement. The average score of resilience in the cognitive behavioral group counseling increased 15.77 from pretest to posttest, 18.30 from pretest to follow up, and 2.53 from posttest to follow-up stage. While the average of resilience of waiting list control group tended to decrease. The aforementioned results confirmed the first and the second hypotheses of the study.

Refer to Table 2, the main effect of group is significant \( F(2.87) = 384.472, p < 0.05, \) with effect size on \( \eta^2_{\text{partial}} = 0.898 \). These results indicate that the conditioning differences in the three subject groups significantly influenced the difference of the resilience levels.

### Table 2. The main effect of group (between subject’s effect) with repeated measures

| Sum of Squares | df | Mean Square | F     | p-value | \( \eta^2_{\text{partial}} \) |
|----------------|----|-------------|-------|---------|-----------------------------|
| Inter          | 1  | 375872.1    | 37168.53 | 0.00 | 0.99 |
| Group          | 2  | 3888.03     | 384.472  | 0.00 | 0.89 |
| Error          | 87 | 10.11       |        |        |                 |

### Table 3. The main effect time and interaction effect between time and group with repeated measures

| Sum of Squares | df | Mean Square | F     | p-value | \( \eta^2_{\text{partial}} \) |
|----------------|----|-------------|-------|---------|-----------------------------|
| Time           | 1  | 3896.044    | 545.501 | 0.000 | 0.862 |
| Interaction effect time x group | 4  | 1004.794 | 140.685 | 0.005 | 0.764 |
| Error (time)   | 174| 7.142       |        |        |                 |

### Table 4. The comparison of resilience score between groups with bonferroni adjustment test

| Group Factors                  | Group Factors                  | Mean Difference (I-J) | p-value | 95% Confidence Interval for Difference |
|-------------------------------|--------------------------------|-----------------------|---------|--------------------------------------|
| Internet-Based Cognitive Behavioral Counseling | Cognitive Behavioral Group Counseling | 0.1667 | 1.000 | Lower Bound: -0.99 | Upper Bound: 1.32 |
|                               | Waiting-list Control           | 11.4667*              | 0.000 | Lower Bound: 10.30 | Upper Bound: 12.62 |
| Cognitive Behavioral Group Counseling | Waiting-list Control           | 11.3000*              | 0.000 | Lower Bound: 10.14 | Upper Bound: 12.45 |
In Table 3, the major effect of time (two level of time: post-test and follow-up test) to the resilience is significant \((F_{\text{Sphericity-assumed}}[1,174] = 545.501, p < 0.05, \text{with effect size on } \eta^2_{\text{partial}} = 0.862)\). Meanwhile, the interaction effect between time by groups is significant \((F_{\text{Sphericity-assumed}}[4,174] = 140.685, p < 0.05, \text{with effect size on } \eta^2_{\text{partial}} = 0.764)\).

The results as shown in Tables 2 and 3 confirmed the third hypothesis of this study, which stated that there is a statistically significant difference of resilience in the cognitive behavioral group face-to-face counseling, Internet-based cognitive behavioral counseling, and waiting-list control group.

The comparison of resilience mean scores for each group by Bonferroni adjustment test (Table 4) shows that student resilience in Internet-based cognitive behavioral counseling did not differ significantly with student academic resilience in cognitive behavioral group face-to-face counseling: mean difference = 0.166, \(p > 0.05\). Student resilience in Internet-based cognitive behavioral counseling was significantly higher than in the waiting-list control: mean difference = 11.466, \(p < 0.05\). Similarly, the cognitive behavioral group face-to-face counseling students’ resilience was significantly higher than the waiting list control group: mean difference = 11.300, \(p < 0.05\). From this result, the fourth and fifth hypothesis of the recent study is confirmed, but note it’s rejected in the sixth hypothesis. In Table 2, the main effect of the group is significant \((F[2.87] = 384.472, p < 0.05, \text{with effect size on } \eta^2_{\text{partial}} = 0.898)\). These results suggest that the conditioning differences in the three subject groups significantly influence the different resilience levels.

### 3. Discussion

The aim of this study is to examine the comparative effectiveness of Internet-based cognitive behavioral counseling with a traditional face to face methods. As one of the methods of counseling that is not yet commonly used in schools, Internet-based cognitive behavioral counseling needs to be tested for its efficacy and feasibility, before it is used further in the wider population. In contrast to face-to-face cognitive behavioral counseling, which that is more commonly used, and has gained trust as an effective method.

The result of this study showed that the effectiveness of Internet-based cognitive behavioral counseling is equal to the face-to-face counseling. The students between both counseling methods showed significant increases after the session counseling.

The findings of this study are in line with previous studies, which found that Internet-based cognitive behavioral counseling method is as effective as face-to-face cognitive behavioral counseling. The meta-analysis study concluded that there is no significant difference in effectiveness between Internet-based cognitive behavioral therapy and cognitive behavioral counseling, both in the group and individual counseling methods (Andersson et al., 2014). Studies by Hedman and colleagues (Hedman et al., 2011, 2014, 2012) consistently show that Internet-based cognitive behavioral therapy has a different effectiveness compared to conventional (face to face) cognitive behavioral therapy in reducing psychological disorders.

The students and school counselors reportedly experienced Internet network constraints through access issues with the Internet-based counseling system. The school counselors also report some difficulties in operating the online counseling system, such as to assess student progress in a diary. They suggest that menus on Internet-based cognitive behavioral counseling systems should be easier to operate.

The findings of this study also indicate that the use of the Internet-based as a method of counseling in the education system and society in Indonesia felt less cost-effective. This is related to the availability of supporting devices and limited Internet access. Thus, there is less support in optimization of Internet-based counseling methods. These findings are also relevant which
suggested that the efforts should be made to support the optimization of internet use or information technology in counseling services in Indonesia, including (1) education and training in the use of information and communication technology for the school counselors and students, (2) system and policy support related to the provision of facilities required in Internet-based school counseling, and (3) further study of the use of information and communication technology in school counseling is needed.

This study enriches the novelty and findings of the present topic. On the other hand, the number of subjects limits this study, since it only involved seventh-grade junior high school students from two schools. Several uncontrolled factors which might impact the resilience of the students were not included in this study, such as gender, social-economic conditions, and intelligence, among other factors. Therefore, the generalization of this study should be considered. However, the strengths and limitations of this study can be useful for prospective researchers in related topics.

4. Conclusion
The results of this study show that Internet-based cognitive behavioral counseling is as effective as traditional cognitive behavioral group face-to-face counseling, in improving student resilience. This study also found that Internet-based cognitive-behavioral counseling saves more time, uses fewer counselors in facilitation, and demonstrates higher flexibility in terms of counselor time, when compared to the face-to-face method. The findings in this study also indicate school counselor preparation is critical in conducting Internet-based counseling; that provisions for supporting facilities and tools is essential; and that policy systems that support the optimization of information and communication technology in school counseling is required and needed. The implications of this study support the use of information and communication technology in the school-counseling program, as an effective means to promote student’s resilience. The strengths and limitations of this study should provide valuable information for the next study.

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