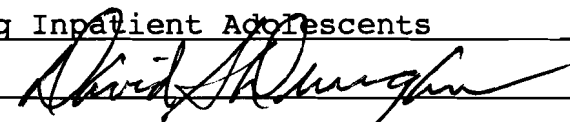


AN ABSTRACT OF THE THESIS OF

Troy A. Sprenger for the Master of Science
in Psychology presented on August 22, 1996

Title: A Comparison of Suicide Probability Scale Scores and
MMPI- A Scores Among Inpatient Adolescents

Abstract approved: 

The purpose of this study was to compare the Suicide Probability Scale (SPS) and Minnesota Multiphasic Personality Inventory for Adolescents (MMPI-A) among inpatient adolescents. The participants for this study consisted of 155 patients, 77 boys and 78 girls ranging from 14 to 17 years of age from a state mental hospital in the midwest. Correlation coefficients were computed between SPS total scores and the 10 basic MMPI-A scales and with the 15 MMPI-A content scales for both male and female participants.

The statistical results of this study indicated many significant relationships between the SPS total scores and the MMPI-A basic and content scales for boys, girls, and boys and girls combined. Correlations between seven of the basic MMPI-A scales and total SPS scores were significant for boys, girls, and boys and girls combined. Results also showed significant relationships between the total SPS scores and 14 of the MMPI-A content scales for boys, girls, and boys and girls combined. The results of the analyses suggest that due to the frequency of significance, the results of this study may not be useful in determining if the MMPI-A would be a useful tool in predicting suicidal risk among inpatient adolescents. Future research should focus on determining why these results yielded the relationships they did. It may also be useful to look at those who may have actually

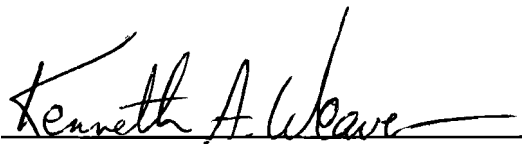
attempted suicide or have thought about suicide.

A COMPARISON OF SUICIDE PROBABILITY SCALE
SCORES AND MMPI-A SCORES AMONG
INPATIENT ADOLESCENTS

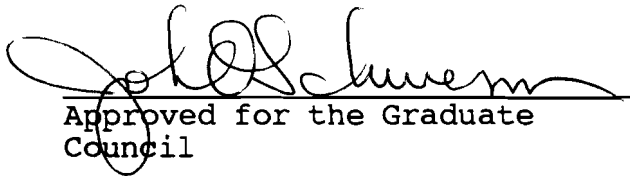
A Thesis
Presented to
the Division of Psychology and Special Education
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In Partial Fulfillment
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CHAPTER 1

INTRODUCTION

Detecting the probability of suicide among adolescents in a mental health setting is one of the many responsibilities that clinicians have. The Minnesota Multiphasic Personality Inventory (MMPI) (Hathaway & McKinley, 1940) is an instrument widely used to assess and diagnose mental disorders in settings such as these for adolescents (Klinefelter, Pancoast, Archer, & Pruitt, 1990). The MMPI has been the subject of an abundance of research concerning the detection of suicide; however, according to Archer (1984) the new Minnesota Multiphasic Personality Inventory for Adolescents (MMPI-A) (Butcher, Williams, Graham, Archer, Tellegen, Ben-Porath, & Kaemmer 1992) has not. The Suicide Probability Scale (SPS) (Cull & Gill, 1982) is an instrument that was developed to detect suicide probability among adolescents as well as adults. Even though the SPS can be very helpful in detecting suicide probability, the authors suggest it should never be used by itself when assessing suicide risk. This poses an interesting question: Is there a relationship between the scores obtained on the MMPI-A and scores obtained on the SPS?

The MMPI-A is a new instrument; therefore, few if any studies have been published concerning its use in the detection of possible suicide risk among adolescents. Likewise, there are few studies available that compare the MMPI-A and other measures.

Although these two instruments are seemingly different, can they be used together to aid in the difficult task of

detecting suicide probability among adolescents?

The purpose of this study is to compare SPS scores with the MMPI-A scores obtained from the same individuals. Specifically, the goal of this study is to compare total SPS scores with the MMPI-A basic and content scales in order to determine if relationships exist between participants' SPS scores and their MMPI-A scale scores. By analyzing the results one may be able to determine if the MMPI-A is a useful instrument in detecting suicide probability among adolescent populations.

This study may provide useful information concerning the possible relationships between SPS scores and MMPI-A scores. Results from this study may aid clinicians when assessing suicide probability in adolescents when both the MMPI-A and SPS are utilized. Results may also suggest a possible profile for suicide susceptibility on the MMPI-A. In addition, this study will add to the research which has been done in the area of suicide probability detection.

Review of the Literature

The review begins with a discussion of adolescent suicide, followed by a review of the Suicide Probability Scale (SPS). The review will also focus on the use of the original Minnesota Multiphasic Personality Inventory (MMPI) along with the Minnesota Multiphasic Personality Inventory-2 (MMPI-2) (Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989) as a measure of suicide prediction. Similarly, the use of the Minnesota Multiphasic Personality Inventory for Adolescents (Butcher, Williams, Graham, Archer, Tellegen, Ben-Porath, & Kaemmer 1992) will be addressed.

Adolescent Suicide

Before the 1950s, suicide among adolescent populations accounted for about half of the suicides across all age groups. During the 1950s, the occurrence of adolescent suicide began to increase. Between 1950 and 1980, the rate of suicide among young persons between the ages of 15 and 24 more than tripled (Dixon, Heppner, & Rudd, 1994; Kirk, 1983; Smith, 1991). According to the U.S. Bureau of Census (1995), the actual rate of suicide for those aged 14-24 years of age is 13 per 100,000 deaths. The statistics indicate suicide is the fifth leading cause of death for this age group, exceeded only by accidents, motor vehicle accidents, homicide, and legal intervention, respectively.

According to Aro, Marttunen, and Lonqvist (1993), this increase in adolescent suicide rate has caused growing public concern and interest in the area of youth suicide. Kirk (1993) indicates the main question many clinicians and researchers face is, "Why are so many young people seeing suicide as an option?" (p. 175). According to Kirk, instead of proposing a single theory explaining why young people see suicide as an option, many experts endorse the hypothesis that as children grow, they are faced with suicidal thoughts and actions after being exposed to traumatic events or debilitating conditions. Examples of these kinds of events seem to center around traumatic family life experiences, stressors that represent important issues to young individuals such as the loss of a friend or family member. Psychiatric conditions including depression, personality disturbances, and substance abuse also play a role in these

kinds of experiences. Chiles and Strosahl (1995) reported that during teenage years, the usual troubles associated with raising a teenager can cause family conflicts. This in turn leads the adolescents to feel as if they are to blame for destroying family harmony. Chiles and Strosahl also indicate family conflict as well as other forces of instability can cause problems. These problems might include but are not limited to changes in residence, school problems, or loss of relationships (including divorce). D'Attilio, Campbell, Lubold, Jacobsen, and Richard (1992) reported that those who are at greater risk for suicide appear to have fewer social contacts and are less satisfied with their social support from friends and family members than those adolescents who are not at serious risk for suicide.

When dealing with suicidology, Range and Antonelli (1990) suggested the involvement of cognitive components (hopelessness about the future), emotional components (depression), and behavioral components (history of actual suicidal attempts). Hopelessness may be a mechanism through which other trait-like variables (e.g., suicidal ideation, negative self evaluation and hostility) are able to influence major variables of psychological well-being (Dixon, Heppner, & Rudd, 1994).

Adolescent suicide has become a growing problem; therefore, early detection in young individuals is very important. One of the tools used to predict the probability of suicide is the Suicide Probability Scale.

Suicide Probability Scale

The Suicide Probability Scale (SPS) (Cull & Gill, 1982)

is a 36 item, self-report scale, which utilizes a total T-score to assess the risk of suicide in adults and adolescents 14 years and older. The test has four subscales which consist of Hopelessness, Suicide Ideation, Negative Self-Evaluation, and Hostility. There are 12 test items targeting Hopelessness, 8 items for Suicide Ideation, 9 items for Negative Self-Evaluation, and 7 items for Hostility. Cull and Gill (1982) stress the SPS should only be used in addition to other tools in assessing the possibility of suicide. The authors also stress the importance of comparing the SPS results with the clinical interpretations of a trained professional.

Even though it is not recommended to be used by itself, the SPS can be useful in assessing suicide risk in adolescents. For example, Cull and Gill (1982) indicate that the SPS has demonstrated excellent concurrent, construct, and discriminate validity. However, Tateman, Green, and Karr (1993) suggested that although the SPS discriminates well between normal adolescents and normal adults (those who are not psychiatric inpatients), it fails to discriminate between normal adolescents and psychiatric inpatients. These researchers suggest the SPS should be used cautiously with adolescents until more research is conducted concerning adolescent SPS responses. They also support the use of the SPS in conjunction with other assessment strategies.

Interestingly, the SPS has previously been used in research concerning suicide. D'Attilio, Campbell, Lubold, Jacobson, and Richard (1992) used the SPS to measure suicide

potential and found the higher the score on the SPS (i.e., an increased suicide risk), the greater the decrease in satisfaction of social support, which they measured with a 27-item scale providing scores for the number of social contacts and scores of individual ratings for perceived satisfaction. In another study, the SPS was used to measure suicide potential. Researchers wanted to see if those adolescents who were at risk for suicide measured by the SPS had more anxiety about death than those who were not at risk for suicide. The study found adolescents at greater risk for suicide may be more apprehensive about death than those who are not at risk (D'Attilio & Campbell, 1990). Other research shown to support the use of the SPS consists of work done by Dancer (1990). She found SPS items jointly discriminate between suicidal and non-suicidal people.

When the SPS was developed, Cull and Gill (1982) tested the SPS to determine if it could differentiate between those who were actually at risk and those who were not. Through conducting point-biserial correlations of participants' items between those who had attempted suicide and those who had not, these researchers found correlations ranging from a low of .06 to a high of .65. All of the relationships were significant except the low .06 item correlation. Subsequently, SPS subscale scores were compared across three groups including normals, psychiatric patients, and those who had attempted suicide. All differences showed significance at the $p < .001$ level.

Cull and Gill (1982) also compared the SPS subscales of 51 patients with their individual subscales of the MMPI.

Results indicated the pattern of correlations were in agreement with clinical descriptions of suicidal individuals and previous research dealing with the use of the MMPI for the evaluation of suicide risk. Additionally, SPS subscales were found to be correlated positively with the Depression, Psychopathic Deviate, Paranoia, and the Schizophrenia scales on the MMPI. These researchers also noted the combination of scales 2-7-8 (high scores on Depression, Psychasthenia, and Schizophrenia) were found to be an indication of suicidal tendencies. Subjects with this MMPI profile should be compared with those who did not have this profile on their SPS scores. Results indicated the scores differed at the $p < .001$ level; supporting the construct validity of the SPS indicating it was high enough for the scale to be considered as a viable measure of suicide probability (Keyser & Sweetland, 1985). Results such as these indicate that the SPS can be a useful tool in predicting those at risk for suicide. However, as previously mentioned, the SPS is recommended to be used only in conjunction with other assessment strategies.

MMPI, MMPI-2, and MMPI-A in Predicting Suicide Risk

The MMPI, originally developed to assist in diagnostic screening, is a very popular instrument used in psychological assessment. Problems originated with the MMPI as it became more widely used in applications for which it was not specifically designed (Butcher & Williams, 1992). These problems prompted a revision of the MMPI which led to the MMPI-2. The MMPI-2 is virtually the same as the MMPI; however, several new scales were added for clinical

applications. Likewise, new norms were added that provide a better sample for current test applications.

The original MMPI has been used in the assessment of adolescent psychopathology for more than 50 years. Archer and Klinefelter (1991) reported the MMPI is the most widely used objective personality inventory with adolescents. Interestingly, the use of the MMPI with adolescents has grown; however, the research to support its use with adolescents has not (Archer, 1984).

Similarly, problems with descriptors, code types and the use of adult norms undermined the appropriateness of the MMPI with adolescents (Williams & Butcher, 1989). Due to these problems, the MMPI-A was released in August of 1992 specifically for use with adolescents (Archer & Krishnamurthy, 1994). The development of the new 478 item MMPI-A eliminated many of these problems concerning descriptors, code types, and norms that were not suitable for adolescent populations. For example, the item pool for the MMPI-A does not contain items referring to sexual behavior where the psychological meanings for adolescents were different than adult meanings. However, it does include content relating specifically to problems that occur among adolescents.

When the MMPI-A was developed, continuity was maintained for the L and K validity scales; however, the F scale which detects exaggerated responses had to be divided into two subscales in order to assess the validity of the entire booklet (Butcher & Williams, 1992). Continuity was also

maintained for the eight clinical scales along with scales 5 (Mf) and 0 (Si).

Several new scales were added to address commonly experienced problems of adolescents. The new adolescent norms were developed from a contemporary sample of adolescents from several different regions of the United States in the hope of establishing a more relevant comparative group for adolescents (Butcher & Williams, 1992).

Since the MMPI-A is a new instrument, there is limited research available. Presently no research concerning the MMPI-A and suicide is available. Therefore, the following discussion will focus on the MMPI as an instrument used to assess suicide risk.

In an attempt to find a more reliable means of utilizing the MMPI to predict suicidal behavior, there has been a considerable amount of research conducted. Farberow and Devries (1967) developed the Suicide Threat Scale which consisted of 52 MMPI items that significantly differentiated a male psychiatric suicide threat group from a non-suicidal psychiatric control group. This scale correctly classified 80% of those who threatened suicide and 68% of the non-suicidal subjects. However, a replication study of the scale correctly classified 72% of those who threatened suicide, but only 42% of the non-suicidal group. These results were too low to be used in clinical settings. Clopton and Jones (1975) similarly failed to find significant differences between groups, which indicated the lack of validity of the Suicide Threat Scale.

Clopton and Baucom (1979) indicated six clinical

psychologists, who were all well trained in MMPI interpretation, could not correctly identify suicidal and non-suicidal patients from their MMPI profiles. Researchers concluded the main question should be whether the data from the MMPI can be of assistance when identifying suicidal individuals, not whether the MMPI is sufficient in suicidal identification.

Clopton, Pallis, and Birtchnell (1979) also tried to make distinctions between suicidal and non-suicidal psychiatric patients using the MMPI scales. Their discriminant analysis showed nearly all male patients (100% of the suicidal and 97.5% of the non-suicidal patients) were classified correctly. However, in their cross validation study, there were no male suicidal patients classified correctly. The discriminant analysis for women was much lower than the male study, (36.4% of women suicidal patients were classified correctly). The differentiation was affected further after cross validation for females, indicating a much lower percentage of suicidal patients who were classified correctly.

Clopton, Pallis, and Birtchnell (1979) also suggest an elevation of the Depression and Hysteria scales may play an important part in predicting suicide attempts among certain types of individuals, such as those who have MMPI profiles where Psychasthenia and Schizophrenia are the two most elevated scores. In another study where comparisons were made between a suicide completion group and a psychiatric control group Watson, Klett, Walters and Vassar (1984) found the 13 scales of the MMPI were not significant predictors of

suicide. In addition, they found various profile types identified as characteristic of suicide were not significant predictors of suicide or the risk of suicide.

Furthermore, Watson, Klett, Walters, and Laughlin (1983) found evidence suggesting a short term suicidal-state concept rather than a long-term suicidal-trait concept. The aforementioned researchers compared MMPI scores of people who had committed suicide not long after taking the MMPI to the scores obtained by individuals who had killed themselves more than three months later. Their results suggest that a short-term suicide state is reflected by the tendencies measured by several elevated MMPI scales specifically consisting of Paranoia, Hysteria, Schizophrenia, and a low score on the Mania scale.

Other researchers have analyzed specific scales of the MMPI to determine whether or not specific profiles exist for those at risk of suicide. For example, Poeldinger, Gehring, and Blaser (1973) looked at 37 depressed patients including 9 who had attempted suicide in the past. They found anxiety and depression were correlated with an increased risk of suicide and suggested depressed suicidal patients are generally anxious, tense and nervous. Also, since the MMPI reveals depressive tendencies by an increase in both the Depression and the Psychasthenia scales; there was also a correlation between suicidal risk and Psychasthenia scores.

In another study concerning individual scales on the MMPI, Boone (1993) indicated an elevated Depression scale along with an elevated Depression Content scale successfully differentiated patients according to their level of suicide

risk. In the same study, the Depression scale of the MMPI along with the Depression Content scale were also compared with other measures that assess clinical depression. These measures included the Suicide Probability Scale (SPS), the Beck Depression Inventory (BDI), and the Beck Hopelessness Scale (BHS). Results indicated the Depression scale and the Depression Content scale of the MMPI were significantly correlated with each of these three measures of clinical depression.

Summary

After reviewing the literature on adolescent suicide, action is needed to alleviate the occurrence of suicide among the adolescent population. The ability to predict suicide probability would be useful to clinicians in making more thorough assessments. However, as the research indicates, predicting suicide can be a very difficult task. Many researchers have tried to develop a reliable instrument to solve the dilemma, but little progress has been made in this area.

Research on the SPS has proven to be useful when assessing those who are at risk for suicide, but the author and other researchers suggest it should never be used by itself when assessing suicide potential. The well known MMPI has been the focus of much research over the years concerning the prediction of suicide. Even though there have been a few promising studies suggesting ways the MMPI can be helpful in the prediction of suicide, the overall picture is disturbing.

After reviewing the literature, the obvious solution to the problem of detecting the probability of suicide among

adolescents, lies in the area of more research, especially concerning the MMPI-A since it is a new instrument. Due to the fact the MMPI-A is a new instrument and little research has been completed, studies involving the MMPI-A and suicide need to be conducted. The hypothesis tested in the present study was the participants' SPS total scores and their MMPI-A basic and content scale scores would significantly correlate indicating that the MMPI-A may be useful in the prediction of suicide probability.

CHAPTER 2

METHOD

Participants

The participants for this study consisted of 155 14 to 17-year-old (77 boys and 78 girls) patients from a state mental health hospital in the midwest. All of the 155 patients completed both the SPS and the MMPI-A upon their admission to the hospital. Before taking the tests, each patient signed a consent form agreeing their SPS and MMPI-A results could be used for research. After completion, the tests were scored by a hospital researcher, and the results were entered into a computer. Results entered consisted of total T-scores from the SPS subscale scores and T-scores from the MMPI-A (basic and content scales).

Procedure

The data from the participants' SPS and MMPI-A tests were compared. The analysis of data consisted of comparing total SPS scores and the basic and content MMPI-A scores. In order to determine if there were any significant relationships between the scores on the two instruments, T-scores were computed and analyzed by computing Pearson product moment correlations. Comparisons were made between the participants SPS total T-scores and their MMPI-A T-scores from the 13 basic scales, as well as, their 15 content scales. By calculating the Pearson product moment correlations between the SPS scores and the 13 basic scales along with the 15 content scales on the MMPI-A, results indicated the relationships that exist between total SPS scores and scores on the MMPI-A scales. After analyzing the

results, one may be able to determine the usefulness of the MMPI-A in evaluating suicide probability among adolescents.

CHAPTER 3

RESULTS

The analyses utilized in this study consisted of the Pearson product moment correlations computed between the Suicide Probability Scale (SPS) total scores and the Minnesota Multiphasic Personality Inventory for Adolescents (MMPI-A) basic and content scales for boys, girls, and boys and girls combined. The Bonferroni correction was applied in order to minimize the error rate. Therefore, alpha was set at $p < .005$ when correlating the SPS total scores with the MMPI-A basic scales and the SPS total scores with the MMPI-A content scales.

When correlating the SPS total scores with the MMPI-A basic scales for boys, girls, and boys and girls combined, many significant relationships existed. Table 1 shows significant relationships between the participants' SPS total scores and their MMPI-A basic and content scales. Correlations between seven of the basic scales and the SPS total scores were significant for boys, girls, and boys and girls combined. These scales included Hypochondriasis, Depression, Paranoia, Psychasthenia, Schizophrenia, Hypomania, and Social Introversion. Non-significant correlations existed between the total SPS scores and Hysteria for boys and girls, but when combined there was significance. The correlation between the total SPS scores and the Psychopathic Deviate basic MMPI-A scale showed a significant relationship for boys and boys and girls combined but not for girls. There were no significant relationships found when comparing the total SPS scores with the

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Table 1

Correlations Between SPS Total Scores and MMPI-A Basic Scales
for Boys, Girls, and Boys and Girls Combined

| <u>MMPI-A Basic Scales</u> | <u>Boys</u> | <u>Girls</u> | <u>Combined</u> |
|----------------------------|-------------|--------------|-----------------|
| Hypochondriasis | .46* | .47* | .48* |
| Depression | .47* | .54* | .52* |
| Hysteria | .23 | .28 | .28* |
| Psychopathic Deviate | .44* | .28 | .33* |
| Masculinity-Femininity | .23 | .12 | .22 |
| Paranoia | .55* | .56* | .56* |
| Psychasthenia | .58* | .62* | .61* |
| Schizophrenia | .61* | .67* | .65* |
| Hypomania | .47* | .35* | .39* |
| Social Introversion | .49* | .41* | .46* |

* $p < .005$

Masculinity-Femininity basic MMPI-A scale.

Table 2 shows the correlations between the participants' total SPS scores and their MMPI-A content scales for boys, girls, and boys and girls combined. There were significant relationships between the total SPS scores and 14 of the MMPI-A content scales for boys, girls, and boys and girls combined. These scales consisted of Anxiety, Obsessiveness, Depression, Health Concerns, Alienation, Bizarre Mentation, Anger, Cynicism, Conduct Problems, Low Self-Esteem, Low Aspirations, Social Discomfort, Family Problems, and Negative Treatment. Results also showed one correlation that was not significant between the SPS total scores and the MMPI-A content scale, School Problems, for boys and girls. However, when boys and girls were combined, there was a significant relationship.

Table 2

Correlations Between SPS Total Scores and MMPI-A Content Scales for Boys, Girls, and Boys and Girls Combined

| <u>MMPI-A Content Scales</u> | <u>Boys</u> | <u>Girls</u> | <u>Combined</u> |
|------------------------------|-------------|--------------|-----------------|
| Anxiety | .52* | .51* | .53* |
| Obsessiveness | .50* | .58* | .55* |
| Depression | .64* | .65* | .65* |
| Health Concerns | .49* | .44* | .48* |
| Alienation | .64* | .58* | .61* |
| Bizarre Mentation | .42* | .50* | .47* |
| Anger | .44* | .47* | .46* |
| Cynicism | .34* | .44* | .39* |
| Conduct Problems | .49* | .47* | .47* |
| Low Self-Esteem | .62* | .53* | .58* |
| Low Aspirations | .43* | .34* | .38* |
| Social Discomfort | .39* | .44* | .43* |
| Family Problems | .48* | .53* | .52* |
| School Problems | .27 | .21 | .24* |
| Negative Treatment | .58* | .63* | .60* |

* $p < .005$

CHAPTER 4

DISCUSSION

The results of this study indicate many significant correlations between the participants' Suicide Probability Scale (SPS) total scores and their Minnesota Multiphasic Personality Inventory for Adolescents (MMPI-A) basic and content scales. Past research has suggested that elevations on the Depression, Hysteria, Psychasthenia, and Schizophrenia MMPI basic scales may play an important role in predicting suicide behavior (Clopton et al., 1979). Other researchers such as Watson et al. (1983) have indicated elevations on the Paranoia, Hysteria, Schizophrenia and a low Hypomania score may be suggestive of suicide.

In the present study, when the SPS total scores were compared with the MMPI-A scales, significant relationships existed for some of these same scales. However, many other significant relationships were found. Due to the frequency of significance in this study, one would have difficulty concluding that this research is useful in determining if the MMPI-A is a tool that would aid in predicting suicidal risk. On the other hand, given that the MMPI-A detects psychopathology, there may be some argument that it may aid in predicting suicide risk to some extent.

This study shows relationships exist between Total SPS scores and MMPI-A basic and content scale scores; however, it does not show why these relationships exist. Therefore, future research may wish to focus on why these relationships exist. Other possibilities may include taking into consideration those who have actually attempted or thought

about committing suicide when comparing these measures. Since predicting or assessing those who are at risk for suicide is important when dealing with inpatient adolescents, more research in this area needs to be conducted.

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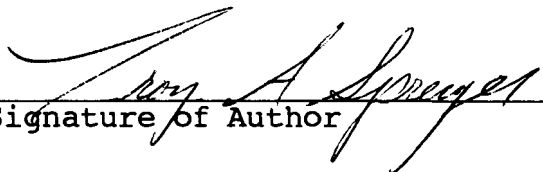
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