DISCUSSION

The aim of the current study was to explore the possible relationships between coping strategies as measured by the Coping Strategies Inventory (Tobin et al. 1982) and the factors of the suicide ideation model proposed by Schotte and Clum (1982, 1987) with an Australian student sample. Schotte & Clum (1982 p690) proposed their model of suicide ideation as follows "In short, this model proposes that individuals deficient in the capacity for divergent thinking are cognitively unprepared to cope with the high levels of life stress observed in populations of suicide attempters and as a result are likely to become hopeless. This ensuing state of hopelessness resulting from the individuals inability to engage in effective problem solving places the individual at risk for suicidal behaviour." They tested their model in three separate studies (Schotte & Clum 1982, 1987 & Schotte et al. 1990). Schotte and Clum (1987) reported that they found further support for their model in a psychiatric population. They conducted a multiple regression analysis which revealed that hopelessness (Hopelessness Scale scores), the number of alternatives generated on the modified MEPS (Means Ends Problem Solving Scale) and total negative life stress (Life Experiences Survey) accounted for 52% of the variance in suicide intent as measured by the Scale for Suicide Ideation. If the current study followed this model testing method then hopelessness, negative life stress and problem solving appraisal would account for 36.5% of the variance in suicide ideation, a very good result lending strong support to the model. However the current study analyses the model in two stages. It has shown that problem solving appraisal combined with negative life stress accounts for only 11.8% of the variance in hopelessness which in turn accounts for 21.9% of the variance in suicide ideation. Thus there is relatively strong support for the relationship between the presence of hopelessness and suicide ideation but only mild support for the model's assumptions about the origins of hopelessness. With the current study being cross sectional in design there is difficulty in making assumptions about the temporal
relationships between variables. However in analysing the model a logical assumption has been made, that negative life stress and hopelessness precede suicide ideation.

It was hypothesised that coping strategies as measured by the Coping Strategies Inventory could be associated with model variables at two points in the proposed model (as displayed in figure 2). Firstly it was hypothesised that coping strategies would be associated with the relationship between negative life stress, problem solving appraisal and hopelessness. Results indicated that engagement coping strategies, negative life stress and problem solving appraisal accounted for 29.2% of the variance in hopelessness a large increase of 17.4% of the variance accounted for by negative life stress and problem solving appraisal alone. When engagement coping strategies was added to the multiple regression equation it accounted for the majority of the variance in hopelessness, and problem solving appraisal no longer contributed unique variance to the equation.

The addition of disengagement coping strategies to the multiple regression analysis with problem solving appraisal and negative life stress with hopelessness increased the amount of variance accounted for by 4.4% over and above that accounted for by negative life stress and problem solving appraisal alone. Disengagement coping and problem solving appraisal did not contribute unique variance to the equation however disengagement coping approached significance. Thus the addition of the coping variables to Schotte and Clum's model significantly improved the model's ability to account for variance in hopelessness scores.

Engagement coping strategies were found to be significantly negatively correlated with hopelessness scores while disengagement coping strategies were found to be significantly positively correlated with hopelessness scores. Thus the factors that make up the engagement coping strategies (problem solving confidence, cognitive restructuring, express emotions and social support) may have a positive buffering effect
on the presence of negative life stress being strongly negatively correlated with hopelessness. The disengagement coping strategy factors (problem avoidance, wishful thinking, self criticism, social withdrawal) seem to be positively associated with the presence of hopelessness. To further refine which particular coping strategy was most strongly associated with hopelessness further analyses were computed. Problem solving confidence (CSI) and express emotions (CSI) were the only factors which accounted for unique variance in hopelessness scores. None of the individual disengagement coping strategies were found to account for unique amounts of the variance in hopelessness scores. After refining which of the Coping Strategy Inventory factors or Problem Solving Inventory factors were most strongly associated with hopelessness scores a further analysis was computed. CSI problem solving confidence, CSI express emotions and negative life stress combined to account for an impressive 31.3% of the variance in hopelessness scores. This means that the coping strategies express emotions and problem solving confidence combined with negative life stress to account for almost three times as much of the variance in hopelessness scores than did negative life stress and problem solving appraisal. Thus strong support was found for a modified version of Schotte and Clum's (1982,1987) original model. The result suggests that a person's self confidence in their problem solving ability may be more important than a person's actual problem solving ability in understanding the suicide ideation process. Schotte and Clum (1982,1987) argued that it was a person's inability to solve their problems due to cognitive rigidity which led to a state of hopelessness which in turn increased the risk of suicide ideation. This proposed cognitive rigidity could only be statistically supported in Schotte and Clum's 1987 study. The results of the current study following on from the work of Heppner et al (1991) suggests that a person's practical problem solving ability is not as important to their overall psychological well being as is their problem solving confidence. Other researchers have supported Heppner et al (1991) belief that cognitive appraisal of one's ability to solve problems is an important aspect of the problem solving process (Butler & Meichenbaum 1981).
Supporting Schotte and Clum's (1982, 1987) model the presence of negative life stress was found to be significantly associated with both hopelessness and suicide ideation. However the variable with the strongest association with hopelessness was one's problem solving confidence.

The results of the current study suggests that a person faced with negative life stress who has a low level of problem solving confidence is at higher risk of developing feelings of hopelessness and in turn is at higher risk for suicide ideation.

The engagement coping factor most strongly associated with hopelessness was CSI express emotions. Thus we now have a modified model which suggests that a person faced with negative life stress who has low self confidence in their problem solving ability and who also bottles up their emotions not expressing them is likely to become hopeless. Unfortunately the current study can only provide information regarding the strength of associations between variables, being cross sectional in design the study cannot give information regarding the temporal relationships between variables. These must be deduced logically and researched more thoroughly in future studies.

As predicted by Schotte and Clum's model (1982, 1987) hopelessness was found to be strongly related to suicide ideation. Of the disengagement coping strategies self criticism was found to be strongly positively correlated with suicide ideation and accounted for a unique amount of the variance in suicide ideation scores. Thus the coping strategy of being self critical was found to be associated with the presence of suicide ideation and feelings of hopelessness. This is perhaps not a surprising finding as being self critical is simply likely to be a concomitant symptom of suicide ideation and hopelessness.

The modified model developed from the results of this study can be seen in figure 14 below.
Figure 14. Modified model of suicide ideation including coping factors.

The finding that the CSI factor express emotions was strongly associated with hopelessness is perhaps not surprising. Failing to express emotions and socially withdrawing have been shown to be factors associated with suicide and suicide ideation (Koella 1972, Topol 1982). However the current finding lends support to the already known negative effects of failing to express emotions.

The finding that the disengagement coping CSI factor self criticism is significantly related to suicide ideation and explains a unique amount of the variance in suicide ideation is more difficult to explain. From the current study it is not possible to tell if the feelings of hopelessness cause self criticism or indeed if the self critical thoughts and feelings lead to the feelings of hopelessness. A third possibility is that feelings of hopelessness and self criticism exist together feeding off one another causing the person to feel more and more hopeless and self critical.
Summary of Findings

In summary, the current study set out to replicate in a modified way the Schotte and Clum (1982, 1987) model of suicide ideation and to see if it could be improved by the addition of a coping variable. The original model as found to be greatly improved by the addition of engagement coping factors. The CSI engagement coping factors of express emotions and problem solving confidence were found to combine with negative life stress to greatly improve the amount of variance in hopelessness scores accounted for when compared with problem solving appraisal and negative life stress alone. This suggests that the strongest point of association is at point 1 in figure 2. The only coping factor as measured by the CSI which contributed unique variance to the relationship at point 2 in figure 2 (hopelessness - suicide ideation) was the CSI factor self criticism. Self criticism is most likely simply a concomitant symptom of suicide ideation and hopelessness.

The key factors in predicting hopelessness were found to be CSI express emotions and CSI problem solving confidence. Thus a person's failure to express their emotions coupled with low problem solving confidence was found to have the strongest relationship with the presence of feelings of hopelessness.

Before discussing the implications of the current study it will be useful to compare the data collected with that of other studies. The current study found that of 85 students who took part in the study and completed the Scale for Suicide Ideation 60% (51 students) reported no ideation, 18% (16 students) reported low ideation (a score of 1-6), 9% (7 students) reported moderate ideation (a score of 6-10) and 13% (11 students) reported high ideation (a score of 10 or higher). To achieve a score of ten or higher on the Scale for Suicide Ideation the respondent must report that they have recently experienced suicide ideation and have considered and/or decided upon the method of suicide. The fact that 11 students of 85 reported this high level of stress is
alarming. The questionnaires were completed a month before the students first year university examinations and examination stress figured prominently as a listed stressor on the Life Experiences Survey. Perhaps this reported high level distress should be considered when planning first year courses and when providing counselling services in universities. It is interesting to note that this high level of distress does not differ significantly from the level of suicide ideation reported by the 175 students in Schotte and Clum’s 1982 study. Schotte & Clum (1982) reported that of the 175 students, 8% (14 students) reported high ideation, 12% (23 students) reported moderate ideation, 33% (59 students) reported low ideation and 45% (79 students) reported no ideation.

To compare the current studies data with that of other studies the following table was compiled.

<table>
<thead>
<tr>
<th>Article</th>
<th>Subjects</th>
<th>Scale for Suicide ideation mean score</th>
<th>Hopelessness scale mean score</th>
<th>Negative life stress mean score</th>
</tr>
</thead>
<tbody>
<tr>
<td>current study</td>
<td>85 uni students</td>
<td>3.49</td>
<td>2.56</td>
<td>11.78</td>
</tr>
<tr>
<td>Dixon et al 1991</td>
<td>1277 introductory psych stud.</td>
<td>1.39</td>
<td>2.51</td>
<td>11.6</td>
</tr>
<tr>
<td>Dixon et al 1992</td>
<td>145 college students</td>
<td>1.52</td>
<td>2.31</td>
<td>6.48</td>
</tr>
<tr>
<td>Dixon et al 1994</td>
<td>217 outpatients in suicide treatment programme</td>
<td>22.9</td>
<td>8.6</td>
<td>n/a</td>
</tr>
<tr>
<td>Pareri et al 1987</td>
<td>50 psychiatric inpatients, 25 outpatients with affective disorders</td>
<td>8.42</td>
<td>8.88</td>
<td>n/a</td>
</tr>
<tr>
<td>Schotte et al 1982</td>
<td>175 psychology students</td>
<td>5.7</td>
<td>4.1</td>
<td>7.9</td>
</tr>
<tr>
<td>Schotte et al 1990</td>
<td>36 inpatients on suicide watch</td>
<td>12.6</td>
<td>15.2</td>
<td>n/a</td>
</tr>
<tr>
<td>Stosal et al 1992</td>
<td>51 inpatient attempters</td>
<td>n/a</td>
<td>10.44</td>
<td>10.04</td>
</tr>
</tbody>
</table>

Table 7. Variable Mean Comparisons: suicide ideation, hopelessness, negative life stress.
As can be seen from the above table the means scores achieved in the current study on the Scale for Suicide Ideation the Hopelessness Scale and the Life Experiences Survey (negative life stress) compare favourably with other studies that used university students as their subjects. The mean scores as expected differed significantly from those studies that used psychiatric patients as their subjects.

To compare the current study data from the Problem Solving inventory with other studies data the following table was compiled.

<table>
<thead>
<tr>
<th>Articles</th>
<th>Subjects</th>
<th>Problem Solving Inventory Total Score</th>
<th>PSI: Problem solving confidence</th>
<th>PSI: Approach avoidance style</th>
<th>PSI: Personal control</th>
</tr>
</thead>
<tbody>
<tr>
<td>current study</td>
<td>85 students</td>
<td>87.27</td>
<td>28.07</td>
<td>46.44</td>
<td>12.75</td>
</tr>
<tr>
<td>Beller et al 1990</td>
<td>45 inpatients</td>
<td>110.06</td>
<td>33.15</td>
<td>55.18</td>
<td>21.73</td>
</tr>
<tr>
<td>Dixon et al 1991</td>
<td>1277 psychology students</td>
<td>82.8</td>
<td>23.56</td>
<td>44.8</td>
<td>16.69</td>
</tr>
<tr>
<td>Dixon et al 1994</td>
<td>217 outpatients on suicide programme</td>
<td>n/a</td>
<td>32.7</td>
<td>53.4</td>
<td>21</td>
</tr>
</tbody>
</table>

Table 8. Problem Solving Inventory Mean Comparisons.

The current study means from the Problem Solving Inventory compare well with that of other studies that used university students and seems to differ significantly from studies that used psychiatric patients as their subjects.

There are number of implications which can be drawn from the results of the current study. Firstly the study has lent moderate support to Schotte and Clum's (1982,1987) model of suicide ideation. Problem solving appraisal and negative life stress were indeed found to be related to feelings of hopelessness and hopelessness was found to be the variable most strongly related to suicide ideation. Secondly the model
has been extended and refined by the introduction of coping. Engagement and disengagement factors have been shown to add significant understanding to the model of suicide ideation. The engagement coping strategy of express emotions has been shown to be strongly related to hopelessness with lower expression of emotions associated with higher levels of hopelessness. Similarly the engagement coping strategy variable of problem solving confidence was found to be significantly associated with hopelessness with lower levels of problem solving confidence associated with higher levels of hopelessness. The disengagement coping strategy self criticism has been shown to be related to the presence of suicide ideation.

The current study has implications for clinicians treating people at risk of suicidal behaviour. There is clinical anecdotal information available which suggests that people exhibiting an inability or a reluctance to express their emotions and highly self critical people are at increased risk of suicidal behaviour. The results of the current study now lend strong support to these two factors as risk factors for the development of hopelessness and suicide ideation. The finding that failure to express emotions is associated with higher levels of hopelessness is particularly relevant for clinicians working with people with negative life stress arising from unsolvable problems. As previously stated not all of life's problems which cause negative life stress can be "solved". The current finding will lend support to clinicians who have argued that expressing emotions assists people recover from negative life stress while "bottling" up emotions is unhealthy for psychological well being.

Limitations of the Study

The single greatest limitation of the study is that the design is cross-sectional. While these designs are necessary to justify the more costly and time consuming prospective studies they do have some limitations. The cross-sectional design has meant that only inferences about the strength of intervariable relationships can be drawn and
that it is not possible to know the direction of these relationships. The design has
limited discussion of the direction of intervariable relationships to those that can be
deduced logically. This limitation means that it is not possible for example to say with
certainty that failing to express emotions helps to lead to a state of hopelessness. Indeed
it may be that a state of hopelessness leads a person to stop expressing their emotions.
Similarly being self critical may be a cause of suicidal ideation or it may be a symptom
of a state of hopelessness and suicidality.

A further limitation of the study was the response rate of 34%. While this rate
compares well with similar studies (Puskar & Lamb 1991, Knapp et al 1991) it could be
argued that when researching symptoms such as suicide ideation and hopelessness in a
non-clinical population that a higher response rate should be achieved.

Direct comparisons between Schotte and Clum's model (1982,1987) results and
the results of the current study are made more difficult by the decision to follow
Heppner et al's (1991) lead and use the Problem Solving Inventory in place of the
Means End Problem Solving Procedure. The reasons for this decision were because the
MEPS has been severely criticised. Butler & Meichenbaum (1981) had challenged the
validity of the MEPS as an indicator of problem solving skills by showing that it is
significantly correlated with verbal intelligence and by suggesting that the test is an
artificial or hypothetical problem solving task with unclear generalisability to real life
problem solving. Nonetheless using a different measure of problem solving makes
direct comparisons difficult especially when the MEPS is reported to measure actual
problem solving ability while the PSI measures problem solving appraisal of one's
skills.

The study could be criticised for using psychology students as the subjects. It
could be argued that they bare little resemblance to the typical adolescent suicide.
However with increasing adolescent suicide and freer access to tertiary education the
subjects chosen are probably more relevant than in 1982 when Schotte & Clum chose them for their study. Also the results on the Suicide Ideation Scale and other measures of psychological distress used in this study show that psychology students are not immune from the types of psychological problems experienced by the general public and are therefore legitimate subjects for study.

It may also be argued that suicide ideation is irrelevant to the study of suicide because so many people experience suicide ideation and do not kill themselves. This study has approached suicide ideation as part of a continuum of self destructive behaviour and thus deems suicide ideation very important.

The study could also be criticised for measuring coping strategies using Tobin's Coping Strategies Inventory. This inventory asks a subject to remember a recent stressful event and to then answer a series of questions about how they coped with this event. Researchers such as Lazarus and Folkman (1984) argue that because a person reports that they used a particular coping strategy for a given event does not mean that they would use that strategy again. They argue that coping is a complex dynamic process in which many situational and environmental and cognitive variables come together to effect how a person copes with an event.

It may be argued that how the CSI interprets a person's coping response may be different to how the individual sees their response. For example a response such as "I kept it to myself" may be seen as social withdrawal but could easily be interpreted as cognitive restructuring such as: I kept it to myself while I thought about it". Self critical statements may also be seen by the subject as positive rather than negative if they learn from them. Folkman et al (1986) defines coping as the person's constantly changing cognitive and behavioural efforts to manage specific external and or internal demands that one appraised as taxing or exceeding the person's resources. It may be that a person changes the way they cope from event to event and that coping is not an
unchanging trait as Folkman and Lazarus (1984) suggest. However the results of the current study suggest that particular coping strategies are strongly associated with indicators of negative psychological outcomes such as hopelessness and suicide ideation.

**Future Research Directions**

These limitations suggest several future directions for research. The results of the current study indicate the need for a longer term prospective study. This way the coping process could be more thoroughly assessed. Furthermore this would enable greater understanding of how coping strategies interact with variables in Schotte & Clum's model (1982,1987). A future clinical study could also look at teaching effective coping strategies to depressed subjects and then research how this might impact on how they deal with life stress and hopelessness.

Finally the current study calls for the development of a more complex model of depression, hopelessness and suicide ideation which more thoroughly considers the effects of differing coping strategies.