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Goal Commitment Predicts Treatment Outcome for Adolescents with Alcohol Use Disorder

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Abstract

Objective: Commitment to change is an innovative potential mediator and mechanism of behavior change (MOBC) that has not been examined in adolescents with substance use disorders (SUD). The Adolescent Substance Abuse Goal Commitment (ASAGC) questionnaire is a reliable and valid 2-scale measure developed to assess the adolescent's commitment to either abstinence or harm reduction (HR) that includes consumption reduction as a stated treatment goal. The objective of this study was to examine the ASAGC's ability to predict alcohol use treatment outcome.

Method: During sessions three and nine of a 10-week treatment program, therapists completed the ASAGC for 170 adolescents 13–18 years of age with alcohol use disorder (AUD). Drinking behaviors were assessed during and after a continued-care phase until 12-month from study onset.

Results: Analysis of Variance results indicated that adolescents who reported no alcohol use had significantly higher scores on the commitment to abstinence scale than adolescents who reported alcohol use. None of the ANOVA models were significant for commitment to HR. When treatment outcome was examined, commitment to abstinence consistently predicted number of drinking days, number of heavy drinking days, and the maximum number of drinks post-treatment. In contrast, commitment to HR did not predict any of the drinking outcomes. These results suggest that the more adolescents were committed to abstinence during treatment, the less they used and abused alcohol after treatment completion.

Conclusions: In addition to the ASAGC's ability to differentiate between commitment to abstinence and commitment to HR, study findings demonstrate that goal commitment consistently predicts AUD treatment outcome.

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Keywords

Adolescent; alcohol use disorder; treatment outcome; goal commitment; harm reduction (HR); mechanism of behavior change (MOBC)

Introduction

Significant progress has been made over the past twenty years in the development of evidence-based practice treatment protocols for youth with alcohol and other substance use disorders (AOSUD; Dennis & Kaminer, 2006; Passetti et al., 2016). Most interventions have been provided in outpatient settings where the vast majority of adolescents are treated. The focus has been on several therapeutic approaches and modalities including family/community therapies, cognitive behavioral therapy, motivational interviewing, and 12-step/fellowship meetings as reviewed in recent meta-analyses (Becker & Curry, 2008; Hogue et al., 2014; Waldron & Turner, 2008), as well as integrated interventions reported in the benchmark cannabis Youth Treatment (CYT) study (Dennis et al., 2004).

Despite prominent differences in theory, design, and methodology, studies employing various treatment modalities in youth with AOSUD have reported remarkably similar outcomes (Hogue et al. 2014; Waldron & Turner, 2008). Rates of adolescent relapse of substance involvement are comparable to those of adults during the first year of post treatment completion (Chung & Maisto, 2006; Kaminer et al., 2002). Research has shown that about sixty percent of adolescents continue to vacillate in and out of abstinence after discharge from 12-week treatment programs (Dennis et al., 2004; Williams & Chang, 2000). At this point, relatively little is known about mechanisms of behavior change (MOBC) in adolescents receiving these interventions, which highlights the need to study the underlying processes involved as reviewed by Black & Chung, (2014). Changes in self-efficacy (Burleson & Kaminer, 2005; Moss et al., 1994), coping skills (Waldron & Kaminer, 2004), perceived difficulty to abstain (King et al. 2009) and motivation or readiness to change (O'Leary & Monti, 2004) appear to account for some portion of treatment effects.

Goal-setting as a predictor of AOSUD treatment outcome has not been well studied. According to the Goal-Setting Theory (Locke & Latham, 2002), specific goal setting is related to better performance due to reducing ambiguity. The only adult study that investigated the role of goal setting in cannabis treatment outcomes reported that initial goal setting was associated with abstinence or moderate use as the desired outcomes (Lozano et al. 2006). Spinola et al. (2017) conducted the only adolescent study on youth AOSUD outcomes and goal setting. They reported that goal setting predicted lower cannabis use and that adolescents with lower frequency of cannabis use are more likely to set abstinence-related goals.

Kelly and Greene (2013) noted that a potentially higher order construct of motivation to change may reflect commitment to change by adhering to identified treatment goals. They argued that “in contrast to being motivated to change, being committed to change implies the presence of a stronger desire that is more compelling and forceful, and that may be less susceptible to the undulating future circumstances and contingencies that so often weaken

resolve and make motivation fluctuating.” Consequently, they developed and tested a five-item commitment to sobriety scale for emerging adults 18–25 years of age. In addition, Hall and colleagues (1991) developed a single-item commitment to abstinence questionnaire for adults, which used six response categories to differentiate the participant’s goals surrounding abstinence. This measure was validated by subsequent research (Mensing et al., 2007; Morgenstern et al., 1996). Although commitment to treatment goals has been examined in adults, it is not clear whether it similarly is a salient mechanism for change in adolescents receiving treatment for AOSUD.

The traditional goal of treatment has been abstinence. However, the adult oriented harm reduction (HR) literature has focused mainly on reduction of negative consequences without addressing abstinence or even decrease in consumption as goals (Marlatt, 1998; Marlatt & Witkiewitz, 2010). Harm reduction might be the preferred choice for some adolescents who do not wish to commit to abstinence. Although, when it comes to adolescents, it is prudent to add consumption reduction as a goal in order to achieve reduction of negative consequences. The reason for that added goal when examining treatment outcome of alcohol use disorders (AUD) is that many adolescents are still on a trajectory of increased drinking (i.e., frequency, quantity) and negative consequences until their mid-twenties when the maturational development of the pre-frontal cortex is complete (Chung & Martin, 2011; Derefinko et al., 2016; Rutherford et al., 2010). It is noteworthy that adolescents might also drift between the two goals of abstinence and HR at different points in the continuity of care from baseline evaluation through treatment and continued care (Kaminer & Godley, 2010). Therefore, in contrast to the adult literature, in this paper the term HR in adolescents has been used to reflect a harm / consumption reduction approach. The value of a HR approach for adolescents has been noted as a potential goal for both an empirical examination and an effective intervention (Colby et al., 2004). Unfortunately, this important observation has not generated studies of HR in youth.

Our team has developed an instrument: the Adolescent Substance Abuse Goal Commitment questionnaire (ASAGC) to assess both models of treatment outcome: commitment to HR and commitment to abstinence, and reported its psychometric properties and clinical utility (Kaminer et al., 2016) As of yet, we are unaware of any investigation that has examined and compared these outcome models in adolescents with AUD.

The present report addresses the predictive utility of goal commitment. That is, the primary goal of this study is to examine whether the ASAGC predicts treatment outcome in adolescents receiving treatment for AUD while addressing both models of treatment outcome. Specifically, the following research questions are addressed: 1) does a commitment to harm reduction or a commitment to abstinence predicts a reduction in alcohol use during treatment, continued care, and follow-up? And 2) what is the expected difference in outcomes between these two different goal settings?

Method

Participants and Procedures

The sample included 170 adolescents 13–18 years of age (67% male; 79% Caucasian) who received treatment for a current DSM-IV diagnosis of an alcohol use disorder (AUD). The study was based on a prospective, intent to treat design. The treatment phase consisted of ten weekly manualized cognitive behavioral therapy sessions. Adolescents also were assessed following a continued/after-care phase (14 weeks after treatment completion) and up to 12 months from study onset. For additional information relating to the study design, please refer to Kaminer et al. (2008). The study protocol and the informed assent and consent procedures were approved by the UConn Institutional Review Board.

Measures

Commitment to a Treatment Goal.—The 16-item Adolescent Substance Abuse Goal Commitment questionnaire (ASAGC; Kaminer et al., 2016) was completed by the therapists of the adolescents during sessions 3 and 9 of treatment. The ASAGC measures the individual's commitment to his/her stated treatment goal. ASAGC items are completed on a response scale ranging from 0 = *definitely not* to 4 = *definitely committed*. A sample ASAGC item is “Does the adolescent express commitment to abstinence as a goal?” The ASAGC includes two scales: one reflecting commitment to harm reduction and the other reflecting commitment to abstinence. The ASAGC has been shown to be a valid and reliable measure of adolescents' commitment to their treatment goal (Kaminer et al., 2016). In the present sample, the Cronbach alpha coefficients were .96 for harm reduction and .92 for abstinence.

Alcohol Use.—The adolescent self-reported use in the past month and since the last assessment was the primary source of alcohol consumption (given that at the time of the study objective detection of alcohol use through saliva, hair, and skin did not accurately reflect use). In addition, participants completed the Alcohol Consumption Questionnaire (ACQ; Cahalan et al., 1969; Cahalan, 1981) during continued care and at the 12-month follow-up session. This measure yields the frequency of drinking days since the last assessment, and the frequency of heavy drinking days (heavy drinking was defined as 3 drinks for females and 4 drinks for males) since the last assessment. Specifically, participants were asked to report the maximum number of drinks they had on one occasion in the previous 30 days. Because the alcohol use variables were positively skewed, they were log transformed to reduce skewness.

Analysis Plan

First, Pearson product-moment correlations between commitment to harm reduction and commitment to abstinence and the alcohol use variables across four time points (during treatment at sessions 3 and 9, during continued care, and at the 12-month follow-up) were tested. Next, analysis of variance (ANOVA) models were conducted to examine the relations between commitment to treatment goal (harm reduction and abstinence from alcohol) at sessions 3 and 9, and alcohol use during, continued care, and follow-up (3, 6 and 12

months). Alcohol use was coded dichotomously with 0 indicating no alcohol use, and 1 indicating alcohol use.

Hierarchical regression analyses were conducted to examine the predictive relations between commitment to a treatment goal (HR or abstinence) and the number of drinking days, the number of heavy drinking days, and the maximum number of drinks consumed on one occasion in the past 30 days. Commitment to HR and commitment to abstinence were assessed during sessions 3 and 9 of treatment. The number of drinking days, the number of heavy drinking days, and the maximum number of drinks were measured during continued care and the final 12-month follow-up. Age and gender were included as covariates in the first step of the regression models, with the commitment to abstinence variables entered in the second step. Because there was little variability in the race of the participants, race was not included as a covariate.

Results

Descriptive Statistics and Bivariate Analyses

Descriptive statistics and Pearson product-moment correlations for all of the study variables during treatment (sessions 3 and 9), continued care, and the 12-month follow-up are provided in Table 1. As shown, commitment to HR and commitment to abstinence were positively and significantly correlated at each time point. Commitment to HR at session 9 was not significantly related to any of the alcohol outcome variables during continued care or follow-up, and commitment to HR at session 3 was related to having fewer drinking days during continued care, but significantly more drinking days and heavy drinking days at the 12-month follow-up. In contrast, commitment to abstinence at both session 3 and session 9 was significantly and negatively related to the number of drinking days and the number of heavy drinking days at both continued care and the 12 month follow-up. Commitment to abstinence was significantly and negatively associated with maximum number of drinks during continued care as well. These correlations indicated that adolescents who were more committed to abstinence during treatment reported fewer drinking days, fewer heavy drinking days, and a lower maximum number of drinks per drinking occasion after treatment.

Analysis of Variance Models Predicting Alcohol Use from Goal Commitment

None of the ANOVA models testing for differences in commitment to treatment between those who had reported drinking alcohol and those who had not were significant for commitment to harm reduction at either session 3 or session 9. In contrast, for commitment to abstinence at session 3, the models were significant during treatment ($F(1,107) = 5.85, p < .01$), and at the 3-month follow-up ($F(1,136) = 6.82, p < .01$). The same pattern was found for commitment to abstinence at session 9, such that the models were significant during treatment ($F(1,107) = 9.13, p < .01$), continued care ($F(1,117) = 5.58, p < .05$), and at the 3-month follow-up ($F(1,121) = 9.58, p < .01$). These findings indicated that adolescents who reported no alcohol use had significantly higher scores on the commitment to abstinence scale than adolescents who reported alcohol use (see Tables 2 and 3).

Regression Models Predicting Alcohol Use from Goal Commitment

Results from the hierarchical regression analyses are presented in Tables 4 and 5. As shown in Table 4, commitment to HR at session 3, predicted fewer drinking days reported during aftercare ($\beta = -.26, p < .05$), but more drinking days reported during follow-up ($\beta = .24, p < .05$). In contrast, commitment to HR at session 9 did not predict the number of drinking days reported during continued care ($\beta = -.07, p = \text{n.s.}$) or during follow-up ($\beta = .14, p = \text{n.s.}$; see Table 5). Commitment to abstinence at session 3 predicted fewer drinking days during aftercare ($\beta = -.19, p < .05$; see Table 4) and commitment to abstinence at session 9 predicted fewer drinking days during aftercare ($\beta = -.22, p < .05$; see Table 5) and follow-up ($\beta = -.22, p < .05$), indicating that the more adolescents were committed to abstinence during treatment, the less they used alcohol after treatment.

A similar pattern was found for the number of heavy drinking days. Commitment to HR at session 3 and session 9 did not predict the number of heavy drinking days during continued care ($\beta = -.22, p = \text{n.s.}$; $\beta = -.11, p = \text{n.s.}$, respectively). While commitment to HR at session 9 also did not predict number of heavy drinking days during follow-up ($\beta = .12, p = \text{n.s.}$), commitment to HR at session 3 predicted a greater number of heavy drinking days during follow up ($\beta = .22, p < .05$). In contrast, commitment to abstinence at both sessions significantly predicted the number of heavy drinking days during continued care ($\beta = -.20, p < .05$; $\beta = -.21, p < .05$) and during follow-up ($\beta = -.18, p < .05$; $\beta = -.20, p < .05$; see Tables 4 and 5).

A different pattern was observed for maximum number of drinks consumed on one occasion. As shown in Tables 4 and 5, commitment to HR (both at session 3 and session 9) did not predict the maximum number of drinks during continued care ($\beta = -.16, p = \text{n.s.}$; $\beta = -.08, p = \text{n.s.}$) or during follow-up ($\beta = .11, p = \text{n.s.}$; $\beta = .00, p = \text{n.s.}$). However, commitment to abstinence at both sessions significantly predicted the maximum number of drinks during continued care ($\beta = -.18, p < .05$; $\beta = -.19, p < .05$; see Tables 4 and 5). Taken together, these results indicate that the more adolescents were committed to abstinence during treatment, the less they abused alcohol after treatment completion.

Additional Results

No significant race differences were found for either optional goal commitments. The sample was under powered to conduct gender analysis.

Discussion

The primary objective of this study was to examine whether goal commitment predicts treatment outcome according to an abstinence oriented model versus a harm reduction (HR) paradigm for adolescents. A consistent pattern of results emerged indicating that commitment to abstinence was associated with a better treatment outcome for a longer period of time compared to commitment to HR. More specifically, higher commitment to abstinence was related to fewer drinking days and heavy drinking days during continued care and follow-up, even up to 12 months following continued care completion. This pattern was not observed for HR.

In addition, adolescents who reported no alcohol use scored significantly higher on the commitment to abstinence scale than adolescents who reported alcohol use. Again, significant effects were not found for commitment to HR. Collectively, these results suggest that the more adolescents were committed to abstinence during treatment, the less they abused alcohol during and after treatment completion. In a recent study, Chung and Maisto (2016) concluded that a pre-treatment assessment of abstinence goal is important and has an early time-limited effect on motivation to abstain. Therefore, it is important to address abstinence goal in the six initial sessions of treatment.

Notably, findings from this study extend our prior work demonstrating the utility of the ASAGC in assessing goal commitment in adolescents receiving treatment for SUD (Kaminer et al., 2016) and emphasize the extension and confirmation of the first study findings. In our prior work, we found the ASAGC to be a reliable and valid clinical research instrument for the assessment of treatment goal commitment in adolescents receiving treatment for substance abuse. In addition, we found the ASAGC to consistently distinguish between commitment to abstinence and commitment to HR.

Based on studying adults, Adamson et al. (2009) noted that prediction of treatment outcome provides the opportunity to deliver three key benefits to the clinical setting: identifying specific client groups achieving poorer outcomes, identifying objectives as a target in treatment, and improving accuracy of prognosis. Results from our study demonstrate that the ASAGC is a useful instrument for predicting substance use outcomes in adolescents. Results from both studies collectively point to the potential limitation of HR as a potential treatment goal set by adolescents with AUD. This finding might be in contrast to the consensus regarding HR in the adult literature and may reflect age related neurocognitive developmental differences (Rutherford et al., 2010).

Risk and protective factors related to the progression of alcohol and drug involvement may influence maintenance of behavioral changes and relapse (Brown, 2004). Based on two data sets, adolescents reported continued use because they liked the effects of the drugs, including self-medicating emotional states, and support of coping with social circumstances in high-risk situations (Dow & Kelly, 2013; Titus et al., 2006). Adolescents cite negative appraisals and effects as reasons to pursue goals such as abstinence or reduction of frequency and quantity of drinking and drug use (Titus et al., 2006). Given the legal status of drinking for minors, a HR goal for non-abstinence reduced drinking with a minimal or no-problem outcome might not be feasible. In studies employing patient centered motivational interviewing for adolescents it is common for the treatment process to include intermediate or proximal HR based goals with the ultimate goal of abstinence at the conclusion of the treatment cycle (Kaminer et al., 2015). The “Holy Grail” of matching treatment services to patients’ “needs and wants” has been elusive (McLellan et al., 1997). It appears that regardless of the appeal of a harm/consumption reduction model for adolescent engagement in treatment as compared to an abstinence model, what they want is not necessarily what they really need as a treatment outcome. Based on the neurocognitive developmental stage of adolescents, it might be inherently challenging to follow the HR model, which ultimately may lead to a treatment outcome that is not in their best interest.

Strengths and Limitations of the Study

This study makes both a conceptual and pragmatic contribution to the research of mechanism of behavior change MOBC in adolescent SUD treatment by examining the innovative construct of commitment to a treatment goal. The study examined the predictive value of the construct of commitment to treatment goal by employing a longitudinal assessment. Moreover, adolescents were assessed throughout treatment, continued care, and a 12-month follow-up period. In addition, the ASAGC data was based on the therapist evaluation which was based on observation of the adolescent behavior and listening to their statements in treatment. Youth in treatment for AOSUD may not be candid regarding their intent due to environmental pressures by family or the juvenile justice system officers (Kaminer et al. 2017). In light of the study strengths, limitations also should be noted including the geographical limitation to Connecticut and the relatively low representation of minorities and females.

Conclusion

The findings of this study do not support a HR oriented approach for the treatment of adolescents with AUD. Further examinations are necessary to replicate these findings for both adolescents and emerging adults (age 19–25 years) as well as over a longer period of time as youths enter adulthood, a critical period for substance abuse (Masten et al., 2008). Reasons for quitting alcohol use can vary by drug and gender (Johnston, 1998; Novacek et al., 1991) and therefore these variables should be studied in adequately powered future research. This could best be achieved by a collaborative multi-site study. Clinical researchers may take advantage of the clinical utility of the ASAGC, including its ability to differentiate between commitment to abstinence versus commitment to HR as well as its potential to predict treatment outcome.

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Table 1

Correlations, Means, and Standard Deviations Among Study Variables

Variable	1	2	3	4	5	6	7	8	9	10	Mean	SD
During Treatment												
1. Harm Reduction Session 3	--											
2. Abstinence Session 3	.39***	--										
3. Harm Reduction Session 9	.64***	.18	--								15.07	7.90
4. Abstinence Session 9	.22*	.70***	.48***	--							11.05	7.98
Aftercare												
5. Drinking Days	-.24*	-.19*	-.06	-.22*	--						3.07	4.50
6. Heavy Drinking Days	-.19	-.20*	-.09	-.20*	.94***	--					3.07	4.51
7. Highest Number of Drinks	-.15	-.19*	-.08	-.20*	.73***	.78***	--				5.98	6.82
12 Month Follow-Up												
8. Drinking Days	.27**	-.18*	.16	-.18*	.18	.20*	.22*	--			3.92	4.94
9. Heavy Drinking Days	.24*	-.19*	.13	-.19*	.19	.20*	.22*	.96***	--		3.79	4.99
10. Highest Number of Drinks	.10	-.14	.00	-.15	.19	.24*	.31*	.72***	.74***	--	7.12	7.22

Note.

* $p < .05$ ** $p < .01$ *** $p < .001$.

Table 2
Mean Differences in Commitment to Harm Reduction and Commitment to Abstinence at Session 3 by Alcohol Use

Time of Measurement	Commitment to Harm Reduction at Session 3			Commitment to Abstinence at Session 3		
	Alcohol Use	No Alcohol Use	<i>F</i> (<i>df</i>)	Alcohol Use	No Alcohol Use	<i>F</i> (<i>df</i>)
During Treatment	<i>M</i> (<i>SD</i>) 14.39 (6.04)	<i>M</i> (<i>SD</i>) 14.87 (6.88)	.02 (1,72)	<i>M</i> (<i>SD</i>) 9.09 (6.71)	<i>M</i> (<i>SD</i>) 12.53 (7.83)	5.85 (1,107)**
Aftercare	14.21 (6.50)	16.00 (6.30)	2.17 (1,78)	10.74 (7.55)	12.54 (7.99)	1.47 (1,117)
3 Month Follow-Up	14.63 (6.79)	13.75 (6.07)	.00 (1,93)	9.69 (7.28)	13.43 (8.45)	6.82 (1,136)**
6 Month Follow-Up	15.39 (6.50)	13.44 (6.21)	.63 (1,97)	10.43 (7.63)	12.02 (8.20)	1.26 (1,142)
12 Month Follow-Up	15.76 (6.53)	12.42 (6.50)	3.11 (1,91)	10.30 (7.63)	12.88 (8.41)	2.70 (1,136)

Note. Age and sex were included as covariates.

* $p < .05$;

** $p < .01$;

*** $p < .001$.

Table 3

Mean Differences in Commitment to Harm Reduction and Commitment to Abstinence at Session 9 by Alcohol Use

Time of Measurement	Commitment to Harm Reduction at Session 9			Commitment to Abstinence at Session 9		
	Alcohol Use	No Alcohol Use	<i>F</i> (<i>df</i>)	Alcohol Use	No Alcohol Use	<i>F</i> (<i>df</i>)
During Treatment	<i>M</i> (<i>SD</i>) 15.35 (8.04)	<i>M</i> (<i>SD</i>) 16.05 (7.60)	.26 (1,72)	<i>M</i> (<i>SD</i>) 8.98 (7.35)	<i>M</i> (<i>SD</i>) 13.23 (8.00)	9.13 (1,107)**
Aftercare	14.72 (7.75)	16.67 (8.74)	1.12 (1,78)	10.06 (7.52)	13.51 (8.62)	5.58 (1,117)*
3 Month Follow-Up	14.79 (8.00)	14.62 (9.22)	.01 (1,83)	9.80 (7.71)	14.32 (8.26)	9.58 (1,121)**
6 Month Follow-Up	15.78 (8.11)	13.26 (7.52)	.58 (1,86)	10.66 (7.90)	12.48 (8.22)	2.15 (1,126)
12 Month Follow-Up	15.74 (8.78)	12.00 (5.49)	2.85 (1,83)	10.58 (8.19)	13.08 (7.85)	2.62 (1,121)

Note. Age and sex were included as covariates.* $p < .05$;** $p < .01$;*** $p < .001$.

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Note. Only the estimates from the final step of the hierarchical regression model are presented.

p<.001.

Table 5
Regression Models Predicting Alcohol Use From Commitment to Harm Reduction and Commitment to Abstinence at Session 9

Independent Variables	Aftercare						Follow-Up					
	Drinking Days			Heavy Drinking Days			Highest Number of Drinks			Drinking Days		
	B	SE	β	B	SE	β	B	SE	β	B	SE	β
<i>Harm Reduction Models at Session 9</i>												
Age	.21	.18	.14	.23	.18	.15	.52	.68	.09	.17	.17	.12
Sex	-.50	.45	-.13	-.20	.45	-.05	-2.02	1.71	-.13	-.17	.39	-.05
Harm Reduction	-.02	.03	-.07	-.03	.03	-.11	-.08	.10	-.08	.03	.02	.14
<i>Abstinence Models at Session 9</i>												
Age	.15	.14	.10	.18	.14	.12	.49	.51	.09	.23	.14	.15
Sex	-.28	.36	-.07	.01	.36	.00	-2.07	1.29	-.14	-.01	.33	-.00
Recovery	-.05	.02	-.22*	-.05	.02	-.21*	-.16	.08	-.19*	-.04	.02	-.19*
												-.20*
												.15
												.52
												.03
												-.09
												1.27
												.08
												-.15

Note. Only the estimates from the final step of the hierarchical regression model are presented.

* $p < .05$

** $p < .01$

*** $p < .001$.