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An Observational Assessment of Peer Group Contributions to Adolescent Identity Development

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A thesis submitted in partial fulfillment of the requirements for the Doctor of Philosophy degree in Psychology

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AN OBSERVATIONAL ASSESSMENT OF PEER GROUP
CONTRIBUTIONS TO ADOLESCENT IDENTITY DEVELOPMENT

(Spine title: Peer Group Contributions to Adolescent Identity Development)

(Thesis format: Monograph)

by

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Graduate Program in Psychology

A thesis submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy

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The University of Western Ontario
London, Ontario, Canada

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THE UNIVERSITY OF WESTERN ONTARIO
SCHOOL OF GRADUATE AND POSTDOCTORAL STUDIES

CERTIFICATE OF EXAMINATION

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entitled:

**An Observational Assessment of Peer Group Contributions to
Adolescent Identity Development**

is accepted in partial fulfilment of the
requirements for the degree of

Doctor of Philosophy

Date _____

Chair of the Thesis Examination Board

ABSTRACT

The purpose of this study was to demonstrate that interaction-based peer groups play an important role in adolescents' identity development. Peer group members' current identity development and peer group interaction processes were examined as predictors of teens' later identity *exploration* and *commitment*. Participants ($n = 1070$; 522 girls; $M_{age} = 15.45$ years) reported on their identity development and a subset of participants took part in an interactive group decision task within peer triads ($n = 258$; 86 triads). Task-related interactions were coded for support (openness to opinions) or discouragement (teasing of opinions and controlling behaviours) of group members' individuality. Nineteen to 22 months later, 103 participants from 59 triads completed a second measure of identity development. As expected, hierarchical linear modelling revealed that the most conducive peer groups for teens' later identity development had members who had yet to secure personal identity commitments and who supported each others' individuality (high in openness to others' opinions and low in controlling behaviours). Unexpectedly, opinion-related teasing in groups also related positively to later identity exploration. For adolescents who had yet to engage in identity processes, membership in committed and controlling groups led to greater identity commitment without exploration (i.e., identification with others' identity choices). These findings provide evidence that interaction-based peer groups may contribute importantly to identity development in mid-adolescence.

Keywords: adolescence, peer groups, socialization, social dominance, teasing, controlling behaviours, openness to others, identity development

ACKNOWLEDGEMENTS

First and foremost, I would like to extend my gratitude to my advisor, Dr. Lynne Zarbatany. You have been a constant source of support and guidance for me and you have played a significant role in helping me develop my research and teaching abilities. By example, you have taught me what it means to be a confident and respected female academic. You truly care about the education and best interests of your students, and thus we hold you in the highest regards.

Second, I would like to thank my collaborator, Dr. Wendy Ellis, who has also been a very positive role model for me. You have provided me with invaluable research experience and helped to teach me what is necessary to be a successful and well-respected academic.

Third, I'd like to extend my appreciation to my committee members. Thank you to Dr. Greg Moran, Dr. Lorne Campbell, Dr. Bradford Brown and Dr. Alan Leschied for your insightful feedback and ideas for future research.

Thank you to my labmates, Megan Kinal, Lisa Boyko, Siman Zhao, and Eugene Ji. It has been an absolute pleasure working with you and I look forward to continuing our relationships as colleagues and friends. Also, I'd like to thank the hardworking research assistants at UWO and the Centre for Addiction and Mental Health who helped me collect and code my dissertation data.

Finally, I'd like to thank my family and friends who have been a constant source of support in my life. A special thank you to my partner, Matthew. You have always encouraged me to believe in myself; throughout my Ph.D. you have truly been my greatest supporter.

TABLE OF CONTENTS

Certificate of Examination	ii
Abstract.....	iii
Acknowledgements	v
Table of Contents	vi
List of Tables	viii
List of Figures.....	ix
List of Appendices.....	x
INTRODUCTION.....	1
Identity: An Overview	2
Benefits of Identity Development	4
The Developmental Trajectory of Identity	7
Identity Development in a Peer Context	10
Peer Group Contributions to Adolescent Identity Development.....	12
The Current Study	19
METHOD.....	23
Participants	23
Measures.....	26
Identity Development	26
Peer Group Formation	28
Peer Group Observation Task and Coding.....	29
Openness to Others' Opinions	31
Social Dominance.....	32
Teasing of Opinions	32
Controlling Behaviours	33
Procedure.....	34
RESULTS.....	36
Handling of Missing Data	36
Preliminary Analyses.....	38
Correlations among Person-Level Variables.....	38
Correlations among Peer-Group-Level Variables	40
Peer Group Homogeneity on Behavioural Predictors	40
Hierarchical Linear Modeling: Analytic Overview.....	42
The Peer Group's Role in Adolescents' Identity Exploration	46

Fully Unconditional Model	46
Individual Level (Level-1) Analysis	47
Group Level (Level-2) Analysis.....	47
Summary of Hypothesis Testing for Identity Exploration	48
The Peer Group's Role in Adolescents' Identity Commitment.....	51
Fully Unconditional Model	51
Individual Level (Level-1) Analysis	51
Group Level (Level-2) Analysis.....	51
Summary of Hypothesis Testing for Identity Commitment.....	54
DISCUSSION.....	57
Peer Group Contributions to Adolescent Identity Exploration	57
Peer Group Identity Exploration	57
Peer Group Identity Commitment	58
Peer Group Interactional Processes	58
Peer Group Contributions to Adolescent Identity Commitment	62
Peer Group Identity Commitment	62
Peer Group Interactional Processes	65
Peer Group Identity Exploration	66
Peer Group Contributions to Adolescent Identity Development.....	67
Individual Contributors to Adolescent Identity Development	68
Limitations.....	69
Future Directions	72
Conclusion.....	75
REFERENCES	77
Appendices	93
Curriculum Vitae	112

LIST OF TABLES

Table	Description	Page
1	Number of Observed Peer Triads by Grade and Gender Composition	25
2	Number of Peer Triads in Final Analyses by Grade and Gender Composition	27
3	Pearson Product-Moment Correlations between Individual- Level Variables	39
4	Mean Time 1 and Time 2 Identity Exploration and Commitment across Gender	41
5	Hierarchical Linear Model Predicting Time 2 Identity Exploration from Time 1 Individual- and Group-Level Variables	50
6	Hierarchical Linear Model Predicting Time 2 Identity Commitment from Time 1 Individual- and Group-Level Variables	56

LIST OF FIGURES

Figure	Description	Page
1	Response rates throughout the Process of Time 2 Recruitment and Data Collection	37
2	3-Way Cross-Level Interaction between Gender, Time 1 Individual Identity Exploration and Group Teasing Behaviours in Predicting Time 2 Identity Exploration	49
3	3-Way Cross-Level Interaction between Time 1 Identity Exploration, Identity Commitment and Group Identity Commitment in Predicting Time 2 Identity Commitment	53
4	3-Way Cross-Level Interaction between Time 1 Identity Exploration, Identity Commitment and Group Controlling Behaviours in Predicting Time 2 Identity Commitment	55

LIST OF APPENDICES

Appendix	Description	Page
A	Sample Time 1 Parental Information Letter and Consent Form	93
B	Sample Time 1 Participant Information Letter and Assent Form	97
C	Sample Time 2 Participant Information Letter and Consent Form	101
D	Sample Time 2 Parental and Youth Information Letter and Consent and Assent Form	104
E	Instructions and Workspace for the Survivor Task	107
F	Time 1 Centre for Addiction and Mental Health (CAMH) Ethics Approval Form	109
G	Time 2 UWO Research Ethics Approval Form	110

Introduction

Adolescence is a time of heightened self-questioning, personal reflection and self-discovery, as young people begin to construct their personal identities (e.g., Erikson, 1968; Marcia, 1966). Because adolescents spend a substantial amount of time with their peer groups (Crockett, Losoff, & Peterson, 1984), and rely on peers for their support, opinions and advice (e.g., Crockett et al., 1984; McNelles & Connolly, 1999; Sharabany, et al., 1981), it is likely that some of the work of identity development occurs during peer interaction. Thus, adolescent peer groups may have a significant opportunity to contribute to their members' developing identities. The purpose of the present study was to provide the first empirical demonstration of peer group contributions to adolescent identity development as conceptualized by Marcia (1966).

The adolescent peer group is a major context for socialization, evidenced by increasing similarity in members' attitudes and behaviour over time (Rubin, Bukowski, & Parker, 2006). My first goal for the present study was to demonstrate that peer group members likewise become more similar in two key identity processes, exploration and commitment over a period of approximately 19 to 22 months. My second goal for this study was to examine peer group behaviour that might facilitate or impede members' identity-related work. To do so, I conducted one of the first observations of mid- to late-adolescents' interaction-based peer groups and examined interactional processes that might promote or discourage identity development. Specifically, I measured the extent to which group members were open to each other's opinions and ideas and

refrained from peer-directed socially dominant strategies (i.e., teasing and controlling of others' opinions).

To begin this paper, I define identity and review research on identity development, its significance, and its emergence and trajectory in adolescence. Next, I explain the importance of social relationships for adolescent identity development. Finally, using relevant theory and research from related domains, I consider the potential role of the peer group in adolescent identity development and make the case that adolescents should be influenced by the identity exploration and commitment of their peer group members. Further, I identify peer group interactional processes that might facilitate or impede identity-related work.

Identity: An Overview

Identity can be conceptualized as an interconnected set of self-relevant values, beliefs and future goals that create an abstract overarching self-definition (Waterman, 1985) and provides individuals with feelings of self-consistency and continuity (Erikson, 1963). In his eight-stage model of psychosocial development, Erikson (1968) proposed that Identity (vs. Identity Confusion), the fifth stage, or crisis, of psychosocial development, occurs in adolescence as an understanding of self emerges to the forefront of psychosocial concern. Thus, a central psychosocial task in adolescence is to arrive at a well-examined, culturally acceptable set of values, goals and beliefs about oneself and one's life that serves to guide future adult decision-making and influence how one views oneself in the context of salient life domains.

The content of identity tends to fall within two main domains, the *ideological* domain (Erikson, 1950; 1968; Marcia, 1966), consisting of career or occupation, religion and politics, and the *interpersonal* domain (Grotevant, Thorbecke, & Meyer, 1982), consisting of family, dating or romantic relationships, friendships, and sex roles (Balistreri, Busch-Rossnagel, & Geisinger, 1995). The salience of identity options within these domains for young individuals depends on what is accepted and valued in their respective culture (Phinney & Baldelomar, 2011). Past research demonstrates that in Western cultures, religion and politics are not particularly salient to adolescents' developing identities as compared to older age groups (Kroger & Haslett, 1991; Lewis, 2003; Pastorino, Dunham, Kidwell, Bacho, & Lamborn, 1997). Alternatively, occupational identity is very salient to most adolescents in modern Western societies who are encouraged at a young age to reflect upon and commit to a vocational path or career that is self-fulfilling and validating, rather than simply working for the gain of external benefits (Baumeister & Muraven, 1996; Côté, 1996). Interpersonal domains of identity also tend to be quite salient to adolescents in Western cultures (Allison & Schultz, 2001; Archer, 1982) as roles within family relationships and friendships change; for example, teens begin to seek more autonomy within their parent-child relationships (Steinberg, 1990) and rely more on the supportive nature of friends (Berndt, 1982; Buhrmester, 1990; Crockett, Losoff, & Peterson, 1984). Further, sexual maturity motivates the exploration of teens' gender roles and sexuality in contexts such as dating relationships (Erikson, 1968; Kroger, 2007).

Using Erikson's theorizing as a basis, Marcia (1966) defined identity *development* along two orthogonal dimensions, the extent to which an individual has *explored* a variety of different identity options (e.g., career paths, family values) and *committed to* one chosen identity. Based on the two dimensions of identity exploration and commitment, individuals can be categorized into one of four identity statuses: *diffusion*, *foreclosure*, *moratorium*, and *achievement*. Individuals in a diffused status have not committed to an adult identity, and have failed to thoroughly explore alternative identities, if at all. Identity diffusion is the least advanced status because neither identity exploration nor commitment has occurred. Identity foreclosure is characterized by a strong commitment to one identity, and a failure to fully explore different options before making this decision. Identity moratorium is conceptualized as a temporary, transitional status, characterized by active exploration and a lack of present identity commitment. Researchers (e.g., Waterman, 1988) conceptualize identity foreclosure and moratorium as intermediate identity statuses because both possess (and lack) one major component of a mature identity. Finally, achievement, the most advanced identity status (Marcia, 1966; 1993), is characterized by evidence of thorough exploration of different identities and a strong commitment to one adult identity.

Benefits of Identity Development

Compared to adolescents with low identity commitments, those who have committed to a clear set of personally-relevant values, beliefs and goals, regardless of degree of self-exploration, are more resistant to conformity (Toder

& Marcia, 1973), and less likely to engage in deviancy and risky behaviours such as alcohol and drug use (Jones & Hartmann, 1988), likely because these behaviours may interfere with personal life goals. Diffused adolescents, on the other hand, have the highest risk for peer conformity (Adams, Ryan, Hoffman, Dobson, & Nielsen, 1984) and problem behaviours (Jones & Hartmann, 1988). Without a clear set of personal beliefs, values and future goals to direct life choices, and a lack of motivation or feelings of inability to construct a personal identity, diffused adolescents may make poor or uncalculated life decisions that they may regret in adulthood.

Identity-committed adolescents also experience better mental health as evidenced by higher self-esteem and less anxiety than adolescents with low identity commitments (Marcia, 1993; Meeus, Iedema, Helsen, & Vollebergh, 1999). Identity moratorium in particular is strongly associated with feelings of anxiety (Marcia, 1993; Meeus et al., 1999) given that individuals are in a state of uncertainty or instability in respect to their beliefs, values, and future goals (Marcia, 1966); however, this anxiety is likely short-lived because moratorium is often a transitional status that is, for some individuals, an important period of personal reflection before reaching identity achievement (e.g., Kroger et al., 2010).

Identity commitments are not enough to support optimal psychosocial functioning, however; for this, individuals must also experience a period of identity exploration. Foreclosed adolescents who adopt the identity commitments of significant others without a period of exploration tend to be

rigid in their values and beliefs and defensive when aspects of their identities are called into question (Marcia, 1993). They lack *identity resiliency*; when foreclosed individuals encounter new life experiences that require them to elaborate on or re-examine their current identity representations, they tend to have trouble doing so (Berzonsky & Neimeyer, 1994; Marcia, 1993). Finally, because the identity options of foreclosed adolescents are restricted to those adopted from significant others, their identity commitments (e.g., specific career goals) may not be suited to their overall character and abilities. This potential mismatch may have negative implications for future life-satisfaction and well-being (Waterman, 2007).

In contrast, adolescents who have thoroughly explored different identity alternatives before making a commitment may make identity choices that are more consistent with their overall personality and skills (Waterman, 2007). Individuals who are identity-achieved also make identity commitments that are more flexible and responsive to changing social circumstances (Marcia, 1993); this may have important implications for coping with life's difficulties. Research suggests that identity achieved young adults are better able to make sense of and resolve unexpected life events that may disrupt their life course than individuals with less developed identities (Dumas, Lawford, Tieu, & Pratt, 2009). Finally, theory suggests that in the process of forming an achieved identity, adolescents are developing a well-thought-out basic representation of the personal expectations and goals that they have for their adult lives (Whitborne, 1987). These commitments provide achieved individuals with a clear sense of agency,

self-confidence and future direction and pave a clear path for goal attainment and subsequent life satisfaction in adulthood (Erikson, 1968; Marcia, 1993). Indeed, research demonstrates that identity achievement is a predictor of positive social and psychological outcomes, such as positive psychological well-being (Waterman, 2007), emotional adjustment (Dumas et al., 2009), and intimate relationship satisfaction in adulthood (Beyers & Seiffge-Krenke, 2010)¹

The Developmental Trajectory of Identity

Although most researchers focus on contributors to identity development in adolescence and beyond, it is important to acknowledge that identity construction is part of a trajectory of psychosocial development across the full lifespan (Erikson, 1968). The products of early self-development, notably the perceptions of ourselves and others that are formed within our earliest relationships, provide an important foundation for later identity exploration and commitment (Erikson, 1968). Attachment researchers such as Bowlby (1973) and Bretherton (1992) suggest that we internalize the messages communicated

¹ It is important to note that the research on the psychosocial benefits of identity achievement have been conducted in developed societies within industrialized countries, such as Canada, the United States, and Germany, in which the exploration of identity alternatives is culturally acceptable. It is unknown if a lack of identity exploration is related to the same psychosocial disadvantages in more rural, less developed societies (e.g., nomadic communities) in which identity options may be extremely limited.

by early interaction patterns with primary caregivers (e.g., the extent to which caregivers are sensitive to infants' bids and how much they encourage infants' exploration of their physical environments) and depending on these messages form general representations of *the self* as competent and worthy of others' affections (versus incompetent and unworthy), *others* as trustworthy and reliability (versus untrustworthy and unreliable) and *the world* as a safe and predictable place (versus unsafe and unpredictable). These "internal working models" or representations of the self and others may have subsequent implications for how comfortable and competent individuals feel exploring their personal identity options (e.g., Barber, 1997; Marcia, 1988; Sartor & Youniss, 2002). Although there is no longitudinal research to date on the influence of early attachment relationships on subsequent identity development (as delineated by Marcia, 1966), researchers generally report a positive relation between concurrent attachment representations and identity development in adolescence (Kroger & Haslatt, 1988; Lapsley, Rice & Fitzgerald, 1990; Meeus, Oosterwegel, & Vollebergh, 2002; Quintana & Lapsley, 1987).

Over childhood, young individuals begin to build on their developing self-concepts partly by modelling and identifying with others' life choices (Kroger, 2007). However, identity researchers generally recognize adolescence as the period of time in which considerable identity-related work begins (e.g., Erikson, 1968; Marcia, 1966), a time in which teens reexamine childhood identifications and assimilate existing and new-found attitudes and experiences into an abstract, overarching concept of self-definition. Indeed Erikson (1968) believed that,

“identity formation, finally, begins when the usefulness of identification ends. It arises from the selective repudiation and mutual assimilation of childhood identifications and their absorption into a new configuration...(p. 159).”

Indeed, in early adolescence, important building blocks of identity (e.g., physical and sexual maturity, drive to adopt adult roles, and advanced cognitive functioning) begin to coalesce within the individual and provide teens with heightened motivation to explore and construct personal identity options. Most notably, adolescents’ newfound ability for formal operational thinking enables abstract and insightful reflection on the self, and further transforms the way that adolescents view themselves and the world around them (Erikson, 1968; Inhelder & Piaget, 1958).

Early adolescents begin identity development in one of the two statuses characterized by low identity exploration (e.g., Allison & Schultz, 2001; Archer & Waterman, 1983; Meilman, 1979): *diffusion*, without a set of personal beliefs, values or goals, or *foreclosure*, with provisional personal beliefs, values or goals adopted from significant others, often parents. Identity exploration increases significantly from early to late adolescence (Klimstra, Hale, Raajmakers, Branje, & Meeus, 2010). A meta-analysis by Kroger and colleagues (2010) demonstrated that with increasing age, a significant proportion of adolescents move out of identity diffusion and foreclosure and into identity moratorium or achievement, the two statuses reflecting high identity exploration. Kroger et al. also demonstrated that movement from moratorium to achievement was the most common identity transition in their study. Therefore, it appears that during

adolescence, teens tend to work towards identity achievement, and for many, identity achievement is preceded by a period of uncommitted, active self-exploration (i.e., moratorium).

Of course these are normative trends and individual differences exist. Some adolescents may never reach identity achievement and instead may remain in a less-developed state of identity, likely in part due to repressive social influences (Erikson, 1968). Further, although research suggests that adolescents are more likely to either progress towards identity achievement or remain stable in their identity development (Kroger et al., 2010), adolescents can also experience temporary bouts of identity regression (e.g., movement to a lower identity status such as from achievement to moratorium; Berzonsky & Adams, 1999; Kroger et al., 2010); this is motivated by new life experiences that may cause them to think differently about themselves and thus discard previous identity choices in an attempt to build new ones (Erikson, 1968; Stephen, Fraser, & Marcia, 1992). Further, adolescents can reach identity achievement without first entering a stage of low-commitment moratorium, but rather by reflecting on pre-existing beliefs, values and future goals. Klimstra et al. (2010) revealed that though identity exploration increases during adolescence, for many teens, the strength of identity commitments remains stable.

Identity Development in a Peer Context

Identity development involves forming a distinct personal self-definition and thus may be thought of as an individual journey; however, social relationships play a crucial role in shaping and reinforcing identity development (Adams &

Marshall, 1996; Erikson, 1968; Youniss & Smollar, 1985). Theorists have argued that adolescents may derive information about different identity options from exposure to various social contacts and contexts, and by learning about and reflecting upon others' identity choices. Further, perceived or actual reactions of significant others may influence adolescents to reinforce or reexamine their existing identity commitments (Cooley, 1902; Crocetti, Rubini, & Meeus, 2008; Mead, 1934). Finally, the support and guidance that adolescents receive from significant others may give them confidence to explore different facets of their identities (e.g., Meeus et al., 2002).

As previously mentioned, adolescents spend a significant amount of time with their peer groups and place significant importance on the support, opinions and advice of their peers (e.g., Crockett et al., 1984; McNelles & Connolly, 1999; Sharabany, et al., 1981). Thus, some of the underlying work of identity development likely occurs during interaction with peers. As yet, however, few researchers have empirically examined peer contributions to Marcia's (1966) adolescent identity development dimensions. Nominal existing research, which demonstrates a positive relation between perceived peer support and identity development (e.g., Hamer & Bruch, 1994; Meeus & Deković, 1995), and a negative relation between perceived peer conflict and identity development (Reis & Youniss, 2004), is limited to self-reported measures of peer experience. Further, there is no existing empirical research on the specific contributions of interaction-based peer groups to Marcia's (1966) adolescent identity development dimensions, in spite of findings that the peer group represents the

most frequented social context in adolescents' lives (Crockett et al., 1984; Rubin et al., 2006). Rather, past research has focused on friends and peers in general.

In the current study, I focused on the role of the peer group in adolescent identity development. Peer groups are defined as three or more peers who spend time together and share a set of behavioural and attitudinal norms. In adolescence, these group members likely consist of same sex peers (Brown, 1990); however, mixed-sex peer groups do exist (Rubin et al., 2006) and according to ethnographic research, become more common as adolescents age (Montemayor & Van Komen, 1985). In the sections below, I elaborate on how the adolescent peer group may socialize members' identity-related processes, and how certain peer group behaviours may serve to facilitate or impede members' identity-related work.

Peer Group Contributions to Adolescent Identity Development

Adolescent peer group members tend to share similar attitudes and behaviours concerning, for example, academic achievement (Ryan, 2001), deviancy (Kiesner, Poulin, & Nicotra, 2003), and substance use (Urberg et al., 1997). Peer researchers tend to attribute this similarity to the results of two social processes, attraction to similar peers and socialization within peer groups (e.g., Brown & Dietz, 2009; Kindermann & Gest, 2009; Rubin et al., 2006). Adolescents are initially attracted to peers who are similar to them in terms of personality, interests, and behavioural dispositions, and subsequently peer group members become more alike over time. Although research on selection processes in peer groups has yet to be conducted (Rubin et al., 2006), research

on dyadic friendships demonstrates that adolescents tend to seek social interaction with others who are similar in attitudes, interests, aspirations and intellect (e.g., Fisher & Bauman, 1988; Kandell, 1978).

Selection of a peer group is likely based on perceptions of similarity to peers as well as the range of social benefits offered by the group. For instance, Sachdev and Bourhis (1987) demonstrated that membership in a popular peer group appears to be universally desired by adolescents due to the numerous social benefits available such as a positive or prestigious reputation, widespread respect, and social visibility within the larger peer context. Admittance to a peer group also depends on the reciprocated interest in the newcomer by group members, with peer groups varying in exclusivity of membership (Pugh & Hart, 1999). Thus, identity similarity may be an important factor in adolescents' selection of peer groups; however, peer group membership also depends on a variety of other factors.

Socialization refers to the tendency for peers to promote similar traits in each another (Rubin et al., 2006), and socialization within adolescent peer groups has been well-documented in many behavioural domains. Research demonstrates that adolescent peer group members develop similar attitudes and behaviour over time in a variety of domains including deviancy and problem behaviour (Cairns, Cairns & Neckerman, 1989; Henry, Schoeny, Deptula, & Slavick, 2007; Kiesner, Cadinu, Poulin & Bucci, 2002; Urberg et al., 1997), aggression (Espelage, Holt, & Henkel, 2003), academic motivation and performance (Ryan, 2001) and prosocial behaviour (Ellis & Zabatany, 2007).

The processes accounting for group socialization effects have not been investigated extensively, but researchers have suggested that group structural characteristics such as group norms may play a role (e.g., Rubin et al., 1998). Peer group norms communicate behavioural and attitudinal expectations, and peer groups enforce these norms in an attempt to preserve group identity (Hogg, 2005). Because a positive peer group identity provides members with enhanced feelings of inclusion and self-worth (Brown, 1990), Hogg suggests that members will uphold group norms for the well-being of the group, and ultimately their own benefit (Hogg & Abrams, 1988). Of course, adhering to peer group norms also helps to secure group membership. Thus, peer group socialization does not necessarily result from unidirectional peer pressure, but rather involves an interplay of influence from the peer group, which can be communicated directly or indirectly, and motivation of group members to uphold group norms and expectations.

Other processes are also likely implicated in peer group socialization effects. Social learning theorists (e.g., Bandura & Walters, 1963; Bandura, 1977) have identified social reinforcement, discouragement and modeling as important mechanisms that subserve social influence in general. Thus, peer groups may socialize group norms by directly praising and approving of certain attitudes or behaviours (Sage & Kindermann, 1999) or discouraging others (Adler, Kless, & Adler, 1992). Further, through modeling, peer group members can engage in indirect socialization by communicating acceptable attitudes and/or behaviours that group members will likely be motivated to adopt, or by exposing each other

to new ways of thinking and behaving (Hundleby & Mercier, 1987; Kandel & Andrews, 1987).

Given that peer group socialization effects are well established and peer group members become more similar over time over a number of different attitudes, behaviours and beliefs (e.g., Ellis & Zabatany, 2007; Espelage et al., 2003; Ryan, 2001) it is reasonable to assume that through the encouragement, discouragement, and/or modeling of certain identity-related processes, peer groups may also socialize their members' identity development. However, to my knowledge, no existing research has examined peer group socialization of identity development, or the degree to which peer group members become more similar in the processes that underlie identity development (*identity exploration* and *commitment*) over time.

Following a peer socialization approach, it is likely that members of peer groups in which identity exploration is common may feel more encouraged to engage in self-exploration than members of peer groups in which identity exploration is less common. For example, in peer groups where some members are concerned with evaluating potential future occupations, adolescents may be encouraged to explore their own possible career options. Further, adolescents whose group-mates are in a state of identity-certainty rather than an active state of self-exploration are likely encouraged to solidify identity commitments of their own. For instance, adolescents who belong to peer groups in which some members have developed and communicated clear goals for the occupation they want to pursue after graduation may feel encouraged to solidify clear

occupational goals as well. Additionally, it is possible that members of more identity-committed peer groups also feel more pressure to adopt personal identity commitments that hinder the self-exploration needed to reach identity achievement than members of less identity-committed peer groups. Indeed, some adolescents may even adopt the identity commitments of their peer group members without any deliberation at all. Research demonstrates that some teens report adopting the identity commitments of significant others (e.g., Berzonsky & Neimeyer, 1994), and it is possible that this behaviour extends to the peer group context. For example, adolescents whose peer group members plan to pursue careers in professional sports may feel encouraged to adopt similar future aspirations without exploring alternative career paths. Examination of these proposed peer group socialization effects would provide an important initial test of peer group contributions to adolescent identity development. If confirmed, they would indicate that adolescent peer group members tend to grow together on the path of identity formation and are influenced by each others' personal identity exploration and commitments.

Further, no research to date has identified peer group interactional processes that might facilitate or impede members' identity-related work. Such research would provide another demonstration of peer group contributions to identity development. However, because there is no existing observational research on behavioural processes of peer group influence, it is difficult to identify group behaviour that might play a key role in influencing members' identity development. Rather, one must look to relevant theory as well as research on the

behavioural predictors of identity development during family interaction in order to build predictions.

Prior research suggests that families that support and encourage their adolescent members' *individuality* (i.e., their unique ideas and opinions) facilitate adolescents' identity development (e.g., Campbell, Adams, & Dobson, 1984; Grotevant & Cooper, 1985). Surprisingly, the association between individuality support and identity development has never been examined within adolescents' interaction-based peer groups, although peer groups represent the other major social context in which adolescents interact (Crockett et al., 1984; Rubin et al., 2006). Peer groups that endorse members' individuality likely encourage self-exploration and the formulation of identity commitments. Below, I identified two interactional characteristics of peer groups that likely communicate peer groups' acceptance and valuing of members' individuality, namely *openness to members' opinions* and *social dominance*.

Adolescents with peer group members who are open to one another's opinions and ideas, and treat others' opinions and ideas as equal in value to their own, likely feel more confident that their peer group will accept their ensuing identity exploration and commitment. Further, these adolescents may feel more comfortable using the peer group as a forum for making sense of their developing identities. Given that self-reflection is important for identity growth (e.g., Bell, Weiling, & Watson, 2005), and that peers allow adolescents to express their opinions without parental or adult censure (Piaget, 1932), peer group members have a unique opportunity to influence each other's beliefs,

values and goals by providing advice, and sharing ideas or encouraging each other to examine their identity-related concerns from different viewpoints (Wilks, 1986; Youniss & Smollar, 1985).

In contrast, adolescents whose peer group members try to control their decision-making or deter other members from expressing their opinions or ideas may feel less confident that the group will accept and support their individual identity development. This type of coercive behaviour is referred to as *social dominance* (Hawley, 1999, 2003). In more hierarchically-organized peer groups, the members who wield considerable social power may use social dominance to enforce peer group norms and keep group members in line (Hogg, 2005). For example, teasing that is focused on criticizing other group members' opinions can be conceptualized as social dominance behaviour that addresses deviations from group norms (Eder, 1991; Shapiro, Baumeister, & Kessler, 1991). Although socially dominant behaviours may encourage group cohesion, they may also communicate to members that their unique opinions and ideas are not valued by the group and that personal expression may be met with censure. Mutual exploration of identities would be unlikely in this situation. Peer groups that engage in low rates of socially dominant behaviour, however, likely create an environment in which it is safe to engage in personal disclosure, and may be more accepting and encouraging of members' personal identity exploration and commitments.

The Current Study

The general purposes of the present study were to investigate the contribution of peer group identity development and peer group interactional processes to adolescent identity development. Data for this study were derived from a larger, longitudinal study on adolescent relationships (see Ellis, Dumas, Mahdy, & Wolfe, 2010). At Time 1, participants' ($M_{\text{age}} = 15.45$) identity exploration and commitment and peer group membership were assessed via a self-report questionnaire and participants were invited to take part in observation sessions with their interaction-based peer groups. The peer groups were observed completing an interactive task designed to promote group discussion. I opted to observe peer groups completing a general task, in which members were required to share their opinions regarding items that they would bring to a deserted island, rather than a more intimate, identity-related group discussion. I was concerned that an identity discussion might make adolescents uncomfortable if they were unable or unaccustomed to identifying or verbalizing identity-related concerns to group members. The general group decision task ensured that all group members could easily participate in discussion and react unselfconsciously to each others' opinions. Finally, at Time 2, approximately 19 to 22 months later, participants completed a second measure of identity exploration and commitment.

As is evident from past research, there is a great deal of identity movement and individual differences in identity-maturity during adolescence (e.g., Klimstra et al., 2010; Kroger et al., 2010). Because I was interested in how peer

groups characteristics might account for later differences in adolescent identity development, I wanted to ensure that I used a measurement tool in the present study that was particularly sensitive to adolescents' identity growth. Thus, although I also checked for differential peer group associations with identity status groups, I used continuous identity scores (exploration and commitment) as my outcome variables. Recent researchers argue that continuous identity exploration and commitment scores permit a more sensitive assessment of identity development than categorical identity status scores because meaningful individual differences and identity-related change can occur within a given identity status that is not captured using a categorical status approach (Busch-Rossnagel, & Geisinger, 1995; Klimstra et al., 2010; Meeus, 1996).

Extending from research suggesting that adolescent peer group members tend to become more alike over time (e.g., Ellis & Zabatany, 2007; Espelage et al., 2003; Ryan, 2001), I proposed that members of peer groups in which identity exploration is common would engage in more identity exploration 19 to 22 months later than members of peer groups in which identity exploration is less common. It was unclear, however, if peer group identity exploration would also contribute to increased identity commitments across the 19- to 22-month span of my study. A period of active identity exploration often precedes identity achievement (Kroger et al., 2010), but membership in a high-identity-exploration peer group may encourage adolescents to remain in a prolonged period of active identity exploration without commitment. Thus, I examined the relation between peer group identity exploration and members' later identity

commitments on an exploratory basis. Further, I proposed that teens whose group members demonstrated greater identity commitment would also experience greater identity commitment and less identity exploration (due to felt or experienced pressure to secure personal identity commitments) 19 to 22 months later than members of less-identity-committed peer groups.

Second, I expected that adolescent members of peer groups that were more open to members' opinions and ideas during the group task would experience more identity exploration and commitment approximately 19 to 22 months later than adolescents from less open peer groups. Further, I expected that adolescents who were members of more domineering peer groups (specifically, those that attempted to control group decision-making and teased members for their opinions and ideas) during interaction would experience less identity exploration and commitment. My main hypotheses are summarized below.

1.a) Members of peer groups with higher group identity exploration scores at Time 1 will have higher individual identity exploration scores at Time 2.

1.b) Members of peer groups with higher group identity commitment scores at Time 1 will have higher individual identity commitment scores and lower individual identity exploration scores at Time 2.

2) Members of peer groups that are more open to others' opinions, and engage in less social dominance (i.e., teasing of opinions and controlling behaviours) will show greater identity exploration and commitment at Time 2 than members of less open and more socially dominant peer groups.

The relation between peer group identity exploration at Time 1 and group members' identity commitments at Time 2 was examined on an exploratory basis. In addition to these hypotheses, I also assessed if the relation between peer-group-level variables and later identity development varied as a function of adolescents' initial identity development, as reflected by Marcia's (1966) status groups. My first reason for conducting moderation analyses was to assess if peer group contributions to identity development are heightened depending on participants' initial identity statuses. For example, peer groups that are open to members' opinions and ideas may be especially beneficial for adolescents who are in the midst of identity exploration and who may be in particular need of a supportive peer forum for reflecting on identity choices; in contrast, peer groups that tease members for their opinions and ideas may be especially detrimental to these adolescents who may be particularly sensitive to personal criticism at this point in their identity development.

My second reason for conducting moderation analyses was to examine, in particular, if peer group control influences diffused adolescents (low exploration, low commitment) in a unique way. Recall that diffused adolescents are the most conforming to peer influence (Adams et al., 1984). Hogg (2004) theorized that individuals who are uncertain about their personal self-definitions (e.g., diffused adolescents) may be most likely to conform to a group identity, especially when the group prescribes clear attitudinal and behavioural restrictions that are enforced by controlling group leaders. Thus, adolescents who have yet to begin developing a personal identity may most readily

adopt/conform to the identity commitments of more controlling peers. In the present study, I hypothesized that initially diffused adolescents would experience high identity commitments and low identity exploration (Hypothesis 2) in more controlling peer groups, whereas other adolescents would experience both lower identity commitments and exploration in more controlling peer groups. If confirmed, these predictions would provide further evidence of diffused adolescents' susceptibility to peer influence.

In all analyses on group influences, I tested for further moderating effects of gender and age, although there was no basis for expecting these effects to be significant based on extant research (e.g. Hamer & Bruch, 1994; Meeus & Deković, 1995; Reis and Youniss, 2004). I also examined the relation between peer group identity development and peer group behaviour on an exploratory basis given that there is no research linking these two peer group factors.

Method

Participants

Participants were recruited from two public high schools in London, Ontario, Canada. At Time 1, 1,070 participants (522 girls; 14-17 years of age, $M_{\text{age}} = 15.45$) completed a self-report questionnaire package. There were 340 grade 9 students (32%), 379 grade 10 students (35%) and 351 grade 11 students (33%). The majority of participants were White (80.1%); other participants self-identified as Asian Canadian (9.4%), Arab Canadian (2.3%), Hispanic or Latino (0.9%), African Canadian (0.8%), First Nation or Métis (0.5%), and other (6%). The socioeconomic classification of participants, retrieved from census data of the two school neighborhoods, was middle- to upper-middle class. Parental

consent (see Appendix A) and youth assent (see Appendix B) was received for all participants, who represented 65% of the total population of grade 9 to 11 students. Participants of high school classes that brought back 100% of their parental consent and assent forms, regardless of the decision made, were reimbursed with a pizza party for their class.

Following survey administration, participants were asked to participate in an observational session with two other members of their peer groups. Peer groups were limited to three members because of time and space constraints and to ensure that raters could clearly observe and transcribe each social exchange during group observations. Parental consent for the observational session was included as part of the original form. A subset of peer group triads ($n = 86$ groups; 258 participants) completed the observational task (see Table 1 for the number of participating peer triads across grade and gender composition). These participants represent 26% of the original sample. A Chi-squared test revealed no differences in gender distribution from the initial questionnaire package ($n = 1070$) to the observation session ($n = 258$), $\chi^2(1) = .77, n.s.$ and an independent samples t-test revealed no differences in age distribution from the initial questionnaire package to the observation session, $t(1068) = 1.83, n.s.$ A multivariate analysis of variance (MANOVA) with observation completion as the independent variable and Time 1 identity exploration and commitment as the dependent variables revealed no significant multivariate effect for observation participation, $Wilks = 0.99, F(3, 1066) = 1.03, n.s.$

Table 1.

Number of Observed Peer Triads by Grade and Gender Composition

Group Grade	<u>Group Gender</u>			Total
	All Male	All Female	Mixed Sex	
9	13	13	3	29
10	11	9	5	25
11	11	6	6	23
Mixed Grade	18	4	3	8
Total	36	33	17	86

One hundred and three participants ($M_{age} = 17.40$ years) completed the internet-based follow-up questionnaire package at Time 2. Participants 18 years of age and older ($n = 23$) gave personal consent (see Appendix C), and for all other participants I collected parental consent and youth assent (see Appendix D). Time 2 participants represented 40% of the observational task sample and were dispersed across 59 observed peer group triads (see Table 2 for the final number of peer triads in my analyses across grade and gender composition). A Chi-squared test demonstrated no differences in gender distribution from the observation session ($n = 258$) to Time 2 participation ($n = 103$), $\chi^2(1) = .70, n.s.$ and an independent samples t-test revealed no differences in age distribution from the observation session to Time 2 participation, $t(258) = -.70, n.s.$ A MANOVA with Time 2 participation as the independent variable and Time 1 identity exploration and commitment as the dependent variables demonstrated no significant multivariate effect for Time 2 participation, $Wilks = 0.98, F(3, 254) = 1.46, n.s.$ Time 2 participants received a coupon for 1 free slice of pizza at a local restaurant and were entered into a draw to win a \$200 gift certificate for an electronics store.

Measures

Identity development. Identity development in the areas of future occupation, relationships (family, friends and dating partners), sex roles, and personal values, was measured using a subset of 24-items from the 32-item Ego Identity Process Questionnaire (EIPQ; Balistreri et al., 1995). Given the age of participants, I removed items ($n = 8$) measuring religious and political identity

Table 2.

Number of Peer Triads in Final Analyses by Grade and Gender Composition

Group Grade	<u>Group Gender</u>			Total
	All Male	All Female	Mixed Sex	
9	8	9	2	19
10	10	8	4	22
11	6	4	5	15
Mixed Grade	0	2	1	3
Total	24	23	12	59

because research suggests that in Western cultures, these facets of identity are not yet salient in adolescence (Kroger & Haslett, 1991; Lewis, 2003; Pastorino et al., 1997).

Using a Likert scale from 1 (strongly disagree) to 6 (strongly agree), participants agreed or disagreed with 12 statements tapping identity exploration (e.g., “I have tried to learn about different occupational fields to find the best one for me”) and 12 statements tapping identity commitment (e.g., “I am very confident about what kinds of friends are best for me”). For each identity domain of interest (occupation, family, friendships, dating partners, sex roles, personal values), two items measured exploration and two items measured commitment. Cronbach alpha for identity exploration and commitment at Time 1 were .65 and .70, respectively, and at Time 2 were .69 and .74, respectively. These reliability coefficients are consistent with those obtained in other studies that used the EIPQ with similar age groups (Bartoszuk & Pittman, 2010; Luyckx et al., 2006). Finally, group identity and commitment scores were created by averaging the individual identity and commitment scores of group members, respectively.

Peer group formation. Observed peer triads were formed based on participants’ nominations of their own peer group members. This method was deemed appropriate given prior research demonstrating that adolescents’ self-nominated peer group members overlap considerably with peer group members identified using grade- or school-wide peer nomination techniques (e.g., the Social Cognitive Map; SCM; Cairns, Leung, Buchanan, & Cairns, 1995; Rodkin

& Ahn, 2009). However, unlike SCM and other similar techniques, I restricted the number of peer group members participants could nominate to 2, again due to practical constraints (time and space limits) and to ensure comprehensible group communication for transcription.

Interested participants nominated two of their peer group members with whom they would like to participate. To ensure that identity data were available for the maximum number of group members, peer group members were limited to other adolescents within the participants' current high school who participated in Time 1 data collection. Nominated peer group members were subsequently contacted by a research assistant to confirm peer group membership. Interested peer group triads were selected with the criteria of maintaining an equal number of participants from each school, grade and gender. Groups that were consistent with these criteria were selected at random for participation.

Peer group observation task and coding. A pair of independent raters who were naïve to the purpose of the study and to participants' identity development scores coded peer group interaction in the "Survivor Task" (see Appendix E) which was created for this study. In this task, participants were asked to imagine that they were stranded alone on a tropical island for one month and choose 3 items from a list of 15 necessities (e.g., axe, pot) that they would bring with them to the island. Because I wanted to ensure that all group members formed their own opinions, participants completed the task individually for the first one to two minutes of the observation and recorded their own item selections. Subsequently, peer groups were asked to come to a

consensus regarding 3 necessities that they would take to the island and provide the reasoning behind their choices. Raters were able to observe considerable opinion sharing and group reaction during the three to four minutes of discussion. The two raters based their coding on the videos of the peer group observations, and were assisted by written transcripts of the interactions. Any uncertainties were resolved by a second party (another rater), or in some cases a third party (me). Twenty percent of the observational sessions were coded for inter-rater reliability.

Based on operational definitions (e.g., Hawley, 1999; 2003) and ethnographic descriptions of the constructs of interest (Adler & Adler, 1998), I created a coding scheme for the purposes of this study. Participants' overall behaviour during the Survivor Task was rated on openness to others' opinions and social dominance (i.e., teasing of opinions and controlling behaviours). Peer group members' individual scores were aggregated to form group-level scores for each variable. Pilot observations ($n = 4$ peer triads), which were conducted with adolescents from another London, Ontario high school 3 weeks prior to initial observation sessions, were coded by both raters and me. Three-point scales were initially chosen for each variable of interest because they effectively captured the range of behaviour exhibited by pilot participants and were maintained because they captured participants' range of behaviours in the actual observation sessions.

Openness to others' opinions. Openness to others' opinions in the Survivor Task was conceptualized as the extent to which participants

acknowledged the opinions of their peers by listening attentively to their opinions and reasoning. Group members were rated on a scale from 1 (not open) to 3 (very open). Participants who received a score of 1 (not open) consistently failed to acknowledge the opinions of their peers, and instead maintained that their own opinion was the correct or only logical option. An excerpt from a “not open” peer group member in the Survivor Task is below.

Peer 1: “You need to pick mine. I wrote the best things. That’s all you need.”

Peer 2: “No, I picked the best things.”

Participants who received a score of 2 (somewhat open) showed an inconsistent pattern of openness to peer opinions, for example, by acknowledging some of their peers’ opinions but not others, or by acknowledging one but not the other peer’s opinions. Finally, participants who received a score of 3 (very open) routinely acknowledged the opinions of peers by listening attentively to their opinions and reasoning, maintaining attentive body language (e.g., head turned to peer, eye contact), and periodically saying “yes, mm-hmm.” Open participants explored their peers’ opinions before making decisions, whether or not they agreed or disagreed with their peers and appeared to view their own opinion and the opinions of their peers as equally important. An agreement from an “open” peer group member in the Survivor Task is below.

Peer 1: “Why do we need a water purifier? Why can’t we just drink water from the ocean?”

Peer 2: "It's salt water."

Peer 3: "Sea salt, um, dehydrates your body more."

Peer 1: "Good call, good call. Water purifier."

A disagreement from an "open" peer group member in the Survivor Task is below.

Peer 1: "I said first aid kit, knife, and fishing gear."

Peer 2: "The reason I didn't put first aid kit is because I was like, hey, if you're on a stranded island you probably will get hurt, but how long is the stuff going to last you in a first aid kit..."

Peer 1: "Sure, but you'd be able to clean any serious cuts."

Two raters obtained a kappa of .88 on ratings of openness to others' opinions.

Social dominance. Social dominance in the Survivor Task was conceptualized as the degree to which participants attempted to dominate or manipulate their peers' behaviour to gain personal benefits (i.e., control over group item selections; Hawley, 1999). Social dominance was reflected in the presence of two types of behaviour in the Survivor Task: *teasing of opinions and controlling behaviours.*

Teasing of opinions. Teasing in this study was defined as behaviour that criticized others' item selections such as name calling, sarcasm, sarcastic laughing and faces, eye rolling and mocking. Some examples of teasing of opinions in the Survivor Task are below.

Example 1.

Peer 1: "I said sunscreen."

Peer 2: “You said sunscreen? Are you like joking me (laugh)?”

Example 2.

Peer 1: “I’d like use the knife to kill the animals.”

Peer 2: “You’re not Tarzan, dude.”

Controlling behaviours. Controlling behaviours were defined as exerting power over others in order to influence their item selections. Instances of controlling behaviours included interrupting, directing or commanding others, talking over others and physically grabbing the paper or pencil from other group members. Some examples of controlling behaviours in the Survivor Task are below.

Example 1.

Peer 1: “No axe! Take the axe out of there (referring to removing axe as an item selection)!”

Example 2.

Peer 1: “K, whatever; just write it down.”

The subcategories of social dominance were measured on a scale of 1 (no demonstration of behaviour) to 3 (frequent demonstration of behaviour) with 2 (infrequent demonstration of behaviour) as the intermediate scale variable. Two raters obtained a kappa of .77 for teasing of opinions and a kappa of .71 for controlling behaviours.

Procedure

This study was part of a larger, OMHF-funded longitudinal study on adolescent relationships. The principle investigators of this project were Dr. David Wolfe from the Centre for Addiction and Mental Health (CAMH) and Dr. Wendy Ellis from King's University College at the University of Western Ontario.² Approval by the CAMH Research Ethics Board was obtained prior to the study (see Appendix F). In Fall 2007, participants completed an initial questionnaire package that was not related to the present study. In late April of 2008, participants completed a second questionnaire package within their homeroom classrooms. For the purposes of this study, I referred to the April 2008 assessment as Time 1 data collection. The Time 1 questionnaire package contained self-report measures of identity development in addition to several other measures (e.g., aggression, risk behaviours, adjustment). Students were led through the questionnaires by a pair of undergraduate or graduate research assistants. Instructions and examples for each measure were read aloud to the

² Although I was not a primary investigator for the larger research project, I played an integral role in data collection at Time 1. Further, I was given the opportunity to include a measure of identity development in the questionnaire package, to include my own peer group task (the Survivor Task) in the group observations, and to develop my own coding scheme for group interaction in the Survivor Task. Finally, I collected follow-up identity data at Time 2 independent of the original primary investigators.

class. Participants were encouraged to ask the research assistants questions at any time. Each session took approximately 1 hour.

After participants completed the questionnaire package, they indicated whether or not they were interested in completing the observational component of the study. The observational component of the present study took place during late May and June of 2008. Interested peer group triad members were contacted by a research assistant via telephone and observation sessions were scheduled until the allotted testing periods (approximately 3 weeks per school) were full. Observation sessions took place in a classroom at the participants' high school during the lunch period or after school and were videotaped for later analysis. Participants sat with their peer group members at three adjacent desks facing a video camera. Observation sessions were run by two undergraduate and/or graduate researchers. One researcher operated the video camera and the other researcher was responsible for reading instructions to the participants. To help participants feel at ease, researchers moved away from the video camera and participants' field of vision while peer groups were completing the observation tasks. Peer groups participated in the Survivor Task in addition to two other interactive group tasks. The entire observational session spanned approximately 20 minutes, with the Survivor Task comprising the last 5 minutes.

In Fall 2009, I received approval from the University of Western Ontario (UWO) Research Ethics Board to collect follow-up identity data on participants (see Appendix G). Beginning in November 2009 until February 2010 (Time 2

data collection), participants who completed the observation session were contacted by an undergraduate or graduate research assistant via e-mail and/or telephone and invited to take part in an online questionnaire package. Further, approximately 2 months after we began e-mailing and calling participants, I received permission from the UWO Research Ethics Board to contact participants using a popular social networking website. Participants who were unavailable via e-mail or phone, often due to changes in contact information, and who were members of this social networking website received an electronic message inviting them to take part in the study. Participants who agreed to take part in Time 2 data collection were then e-mailed an online link that allowed them to complete the questionnaire package, which included the self-report measure of identity development in addition to other measures (e.g., adjustment), over a secure connection. Finally, approximately 2 weeks and 1 month after receiving the online link to the questionnaire package, we had to remind many consenting participants via e-mails or telephone about completing the measures. See Figure 1 for a detailed account of participants' response rates during recruitment.

Results

Handling of Missing Data

All participants who completed the observation session ($n = 258$) completed Time 1 measures of identity exploration and commitment. However, only 40% of the participants who completed the observation session completed

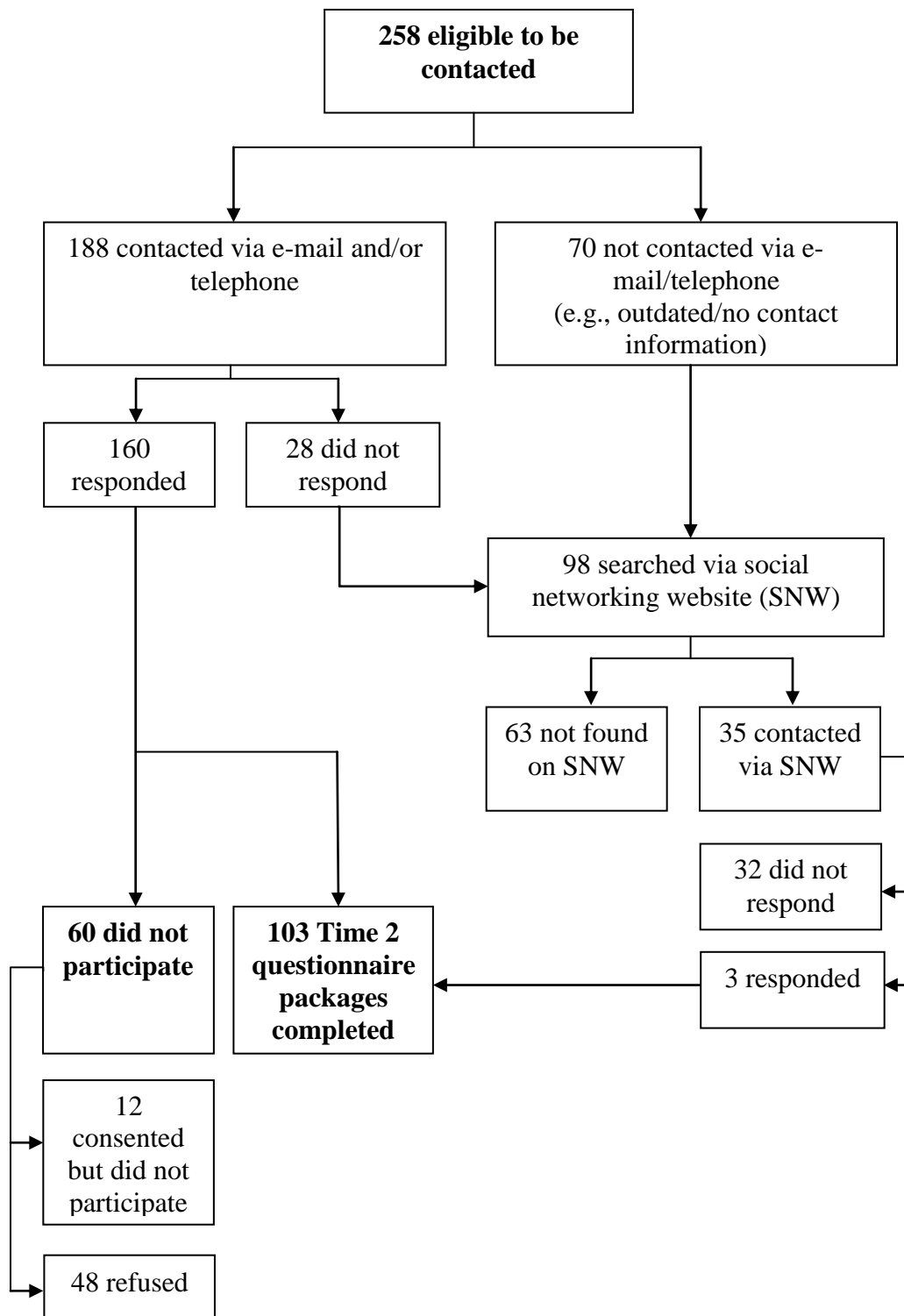


Figure 1.

Response rates throughout the process of Time 2 recruitment and data collection

Time 2 measures of identity exploration and commitment. I refrained from imputing missing outcome data because of the high attrition rate (60%) and the erroneous estimations that can result from imputing substantial missing data (e.g., Kristman, Manno & Côte, 2005). Thus, all analyses reported below were conducted on data from participants who completed Time 2 data collection ($n = 103$).

Preliminary Analyses

Correlations among person-level variables. Positive zero-order correlations demonstrated stability in identity exploration and commitment scores across a 19- to 22-month period of time, $r = .52, p < .001$ and $r = .40, p < .001$, respectively. Examination of the means revealed that identity exploration significantly increased from Time 1 ($M = 3.59$) to Time 2 ($M = 3.76$), $t(102) = -2.92, p < .01$ and identity commitment remained stable from Time 1 ($M = 4.01$) to Time 2 ($M = 3.91$), $t(102) = 1.54, ns$. The concurrent relations between identity exploration and commitment at Time 1 and Time 2 were not significant (see Table 3 for all level-1 correlations).

As also shown in Table 3, participant age was significantly positively related to Time 1 identity exploration, ($r = .27, p < .01$). A multivariate analysis of variance (MANOVA) with gender as the independent variable and Time 1 identity commitment and exploration as the dependent variables produced a significant multivariate effect for gender, $Wilks = 0.91, F(2, 100) = 4.94, p = .009$. Univariate ANOVAs revealed that girls had higher Time 1 identity commitment but not exploration scores than boys, $F(1) = 7.15, p = .001$

Table 3.

Pearson Product-Moment Correlations between Individual-Level Variables

Measure	1	2	3	4	5
1. Time 1 Identity Exploration	-	-.16	.52***	-.18	.27**
2. Time 1 Identity Commitment		-	.05	.40***	-.08
3. Time 2 Identity Exploration			-	-.19	.14
4. Time 2 Identity Commitment				-	.01
5. Age					-

$n = 103$

* $p < .05$.

** $p < .01$.

*** $p < .001$.

(see Table 4 for gender means and standard deviations). A similar analysis on Time 2 identity exploration and commitment scores produced another multivariate main effect for gender, $Wilks = .86$, $F(2, 100) = 8.08$, $p = .009$, and this time univariate analyses produced significant gender main effects favoring girls for both commitment and exploration, $F(1) = 3.97$, $p = .049$ and $F(1) = 8.31$, $p = .005$, respectively (see Table 4).

Correlations among peer-group-level variables. Zero-order correlations were calculated among all peer-group-level variables. Peer group identity commitment, which was derived by aggregating group members' individual Time 1 identity commitment scores, and peer group identity exploration, which was derived by aggregating group members' individual Time 1 identity exploration scores, were not significantly related nor significantly related to any other group-level predictor (peer group openness, teasing of opinions, or controlling behaviours), $ps = n.s.$ Peer group openness to others' opinions was negatively related to group teasing of opinions ($r = -.36$, $p = .001$) and controlling behaviour ($r = -.39$, $p < .001$). Group teasing of opinions and controlling behaviour were positively related ($r = .24$, $p = .026$). Because the correlations between the three group-level observation variables were only medium in strength (less than 16% shared variance; Cohen, 1988), I analyzed each variable as a separate potential predictor of adolescent identity development.

Peer group homogeneity on behavioural predictors. Before peer-group-level observation variables and identity development scores were

Table 4.

Mean Time 1 and Time 2 Identity Exploration and Commitment across Gender

Measure	Girls <i>M(SD)</i>	Boys <i>M(SD)</i>
Time 1 Identity Exploration	3.65(.52)	3.53(.55)
Time 1 Identity Commitment	4.15(.60)	3.86(.52)
Time 2 Identity Exploration	3.93(.63)	3.58 (.63)
Time 2 Identity Commitment	4.03(.58)	3.77(.75)

n = 103

aggregated, *intraclass correlations* (ICCs) were calculated to examine between-group differences in participants' individual openness, teasing of opinions, and controlling behaviours as well as Time 1 identity exploration and commitment scores. ICCs measure the proportion of variance on a given construct attributable to group membership. ICCs were significant for all observation variables and reveal that there was considerable between-group variation in the use of openness, teasing of opinions and controlling behaviours. Specifically, 17.9% of the total variance in openness to others' opinions ($\tau = .090$, $\chi^2(85) = 140.61$, $p < .001$), 17% of the total variance in teasing of opinions ($\tau = .057$, $\chi^2(85) = 137.24$, $p < .001$), and 24.5% of the total variance in controlling behaviours ($\tau = .137$, $\chi^2(85) = 167.93$, $p < .001$) was between peer groups as opposed to within peer groups. Further, ICCs were significant for both identity exploration ($\tau = .0361$, $\chi^2(85) = 125.52$, $p = .003$) and commitment ($\tau = .0358$, $\chi^2(85) = 116.35$, $p = .014$) and revealed that 25.59% of the total variance in identity exploration and 10.95% of the total variance in identity commitment was attributed to peer group membership at Time 1. On the whole, these results provide suggestive evidence of within peer group similarity in observed behaviour and identity development.

Hierarchical Linear Modeling: Analytic Overview

Peer group research involves the examination of interdependent, nested levels of analysis such as individuals nested within peer groups. All members of a peer group are exposed to the same social environment and set of group norms that may have a significant impact on their development. Further, each peer

group member possesses unique characteristics that may also impact his or her development. Thus, with nested data, both group-level predictors (variance between groups) and individual-level predictors (variance within groups) may help to explain outcome variables. Multiple regression analysis, with the peer group as the unit of analysis, does not account for within-group variation. In contrast, Hierarchical Linear Modeling (HLM; Bryk & Raudenbush, 1992) allows for both individual-level and group-level predictors and estimates both within- and between-group variance in the same model. Thus, HLM is the most appropriate method for analyzing nested data.

I tested two 2-level HLM models, one each for predicting Time 2 identity exploration and identity commitment. For all analyses, individual-level predictors (participants' gender, age, Time 1 identity exploration and commitment scores, and the interaction between Time 1 identity exploration and commitment) were first entered into the equation as control variables. Inclusion of the identity exploration x commitment interaction term allowed me to examine participants' initial combination of identity exploration and commitment, similar to their identity status classifications (Marcia, 1966), without decreasing measurement sensitivity. In accordance with the guidelines outlined by Aiken and West (1991), significant Time 1 identity exploration x commitment interactions were graphed with regression lines for participants both one standard deviation above and below the mean for both variables. Thus, I could observe regression lines for adolescents from each identity quadrant (e.g., "high exploration and high commitment" or *identity achieved*, as

compared to the other participants in the sample) and examine if the contribution of peer group characteristics to later identity development varied depending on adolescents' initial identity exploration and commitment. Finally, gender and age were tested as moderators of all significant relationships in the model. The three steps of 2-level HLM analysis are explained below.

The first HLM model tested the impact of Time 1 group identity commitment and exploration, and peer group behaviour (group openness, teasing of opinions, and controlling behaviours) on group members' Time 2 identity exploration scores and the second HLM model tested the impact of these predictors on peer group members' Time 2 identity commitment scores. For each HLM model, I first estimated a *fully unconditional model*, or a model without any individual- or group-level predictors, and then calculated intraclass correlations (ICCs) to determine if average identity exploration and commitment differed systematically across peer groups. Significant intraclass correlations (ICCs) indicate that the peer group context likely exerts a significant influence on the overall variance of identity exploration and commitment scores and further indicates the appropriateness of HLM analysis.

Second, I ran the two HLM models which consisted of a Level 1, within-group random intercept analysis and a Level 2, between-group analysis. The purpose of the Level 1 model was to examine individual-level predictors of Time 2 identity exploration and commitment. In each Level 1 analysis, Time 2 identity exploration or commitment was predicted as a function of participants' gender, age, Time 1 identity exploration, Time 1 identity commitment, and the

interaction term (exploration x commitment) for each individual i within peer group j . Further, all predictor variables in the HLM analyses were grand-mean centered for ease of interpretation. Thus, the intercept (β_{0j}) of the Level 1 equation is the expected outcome for a participant whose Time 2 identity exploration or commitment is equal to the grand mean of the sample after controlling for all individual-level predictors.

$$\begin{aligned} (\text{Time 2 Identity Commitment/Exploration})_{ij} = & \beta_{0j} + \beta_{1j}(\text{Gender})_{ij} + \beta_{2j}(\text{Age})_{ij} + \\ & \beta_{3j}(\text{Time 1 Identity Commitment})_{ij} + \beta_{4j}(\text{Time 1 Identity Exploration})_{ij} + \\ & \beta_{5j}(\text{Time 1 Identity Commitment} \times \text{Time 1 Identity Exploration})_{ij} + r_{ij} \end{aligned}$$

The purpose of the Level 2 analysis was to examine peer-group-level variables that might account for additional variance in Time 2 identity exploration and commitment scores. In the Level 2 analysis, the random intercept (β_{0j}) from the Level 1 analysis was used as the outcome variable to determine if peer-group-level characteristics predict Time 2 identity exploration or commitment scores after controlling for all individual-level predictors.

$$\begin{aligned} \beta_{0j} = & \gamma_{00} + \gamma_{01}(\text{group openness})_j + \gamma_{02}(\text{group teasing})_j + \gamma_{03}(\text{group} \\ & \text{controlling behaviours})_j + \gamma_{04}(\text{group identity exploration})_j + \gamma_{05}(\text{group identity} \\ & \text{commitment})_j + \varepsilon_0 \end{aligned}$$

In order to examine moderation, or cross-level interactions between Time 1 individual-level identity development variables and group-level variables in predicting Time 2 identity development, group-level variables were added to the slope of the three individual-level variables of interest: Time 1 identity commitment (β_{3j}), Time 1 identity exploration (β_{4j}), and Time 1 identity

commitment x Time 1 identity exploration (β_{5j}). In other words, I examined if the slope of the relations between level-1 variables (e.g., Time 1 identity exploration) and outcome variables (e.g., Time 2 identity exploration), differs as a function of level-2 variables (e.g., amount of peer group control).

Once the HLM models were run, non-significant predictors were removed to maintain parsimony and improve model fit (West, Welch, & Galecki, 2007). In the final models, gender and age were tested as moderators of all significant relations in the model. Because age was not a significant predictor or moderator for both HLM models, I do not further comment on this variable in the remainder of the results section.³ Finally, I removed non-significant moderators from the models. Below, the results for both HLM models are described in detail.

The Peer Group's Role in Adolescents' Identity Exploration

Fully unconditional model. A significant ICC demonstrated that 20.34% of the variance in Time 2 identity exploration ($\tau = .0871$, $\chi^2(57) = 87.20$, $p = .008$) was between groups. This ICC value is similar to those found in other social research studies, which usually range from 5% - 20% (Peugh, 2010). On the whole, these results suggest strong within-group peer group homogeneity

³ For completeness, supplementary analyses were conducted to test group gender as a Level-2 (peer-group-level) predictor and moderator of all significant relations in the final HLM models, however no significant group gender differences emerged.

on identity exploration and indicate that the peer group context exerts a significant influence on members' identity exploration scores. Thus, HLM analysis was deemed necessary to explore peer-group-level predictors of between-peer-group differences in identity exploration.

Individual-level (level-1) analysis. In the individual-level analyses, gender ($t = 2.10, p = .037$), Time 1 identity exploration ($t = 5.96, p < .001$) and Time 1 identity commitment ($t = 2.66, p = .010$), but not the interaction between these variables, were significant positive predictors of Time 2 identity exploration. Significant individual-level predictors accounted for 51.25% of the between-peer-group variance in Time 2 identity exploration, and thus a significant amount of between-peer-group variance remained to be accounted for, $\chi^2(58) = 78.67, p = .037$.

Group-level (level-2) analysis. At Level 2 of the HLM analysis, peer group identity commitment ($t = -3.13, p = .003$) and group openness ($t = 2.05, p = .045$) were significant predictors of Time 2 individual identity exploration. As expected, members of peer groups that were less committed to their identities at Time 1 experienced more individual identity exploration at Time 2 than members of more identity-committed groups at Time 1. Further, members of peer groups that were more open to each other's opinions had engaged in more identity exploration at Time 2 than members of less open groups.⁴ No other

⁴ This relation remained significant even when individual-level openness was entered as a control variable.

significant main effects emerged.

A significant 3-way cross-level interaction emerged between gender, Time 1 identity exploration, and peer group teasing of opinions in predicting Time 2 identity exploration ($t = -2.21, p = .028$). Figure 2 illustrates a facilitative relation between peer group teasing of opinions and later identity exploration for most participants; the slope of this relation was strongest for boys with low initial identity exploration. In contrast, for girls with high initial identity exploration, there appeared to be no relation between group teasing of opinions and later identity exploration.⁵ The final model, with non-significant moderator variables removed, is presented in Table 5.

Summary of hypothesis testing for identity exploration. Contrary to Hypothesis 1a, peer group identity exploration was not a significant predictor of members' identity exploration. Hypothesis 1b, however, was partly supported in that members of peer groups that were more identity-committed had lower later identity exploration scores than members of less identity-committed groups. Further, Hypothesis 2 was partly supported in that members of peer groups that were more open to each other's opinions subsequently engaged in more identity exploration than members of less open groups. Although I expected that group teasing of opinions would be a negative predictor of identity exploration, teasing of opinions positively predicted identity exploration for all participants except

⁵ This relation remained significant even when individual-level teasing of opinions was entered as a control variable.

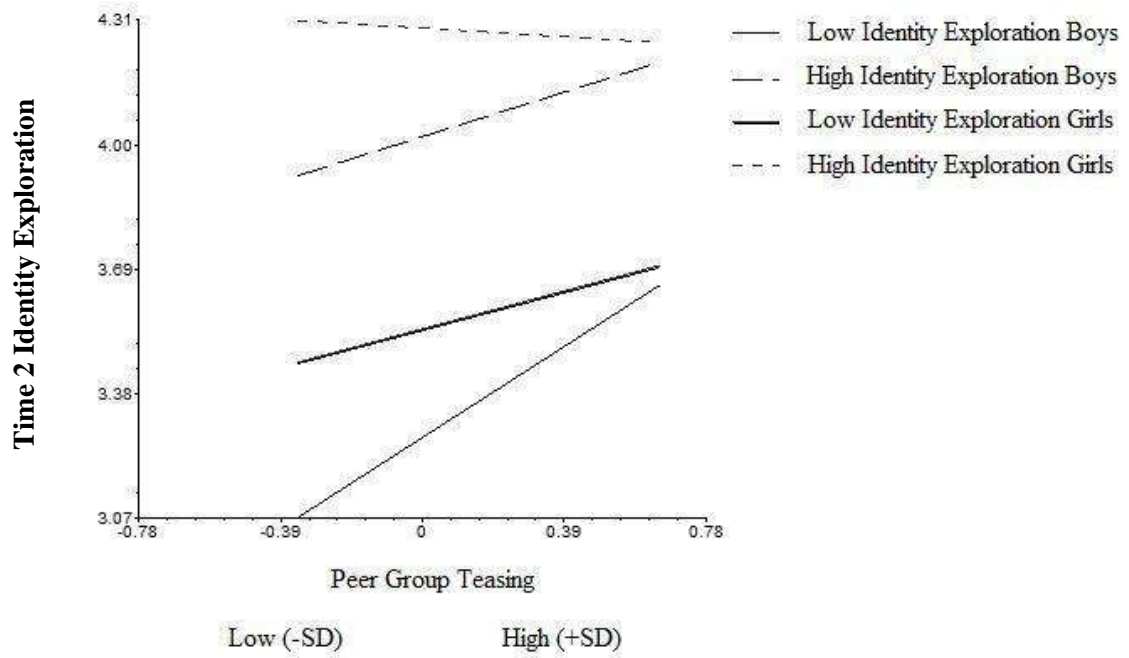


Figure 2.

3-Way Cross-Level Interaction between Gender, Time 1 Individual Identity Exploration and Group Teasing of Opinions in Predicting Time 2 Identity Exploration

Table 5.

*Hierarchical Linear Model Predicting Time 2 Identity Exploration from Time 1**Individual- and Group-Level Variables*

Variable	B	SE	t-ratio
<i>Time 2 Identity Exploration</i>			
For intercept β_{0j}			
Intercept (γ_{00})	3.76	0.56	67.34***
Group openness (γ_{01})	0.34	0.16	2.05*
Group teasing (γ_{02})	0.35	0.19	1.83
Group identity commitment (γ_{02})	-.72	0.23	-3.13**
For intercept β_{1j}			
Intercept for gender (γ_{10})	.28	.13	2.24*
Group teasing (γ_{11})	-.02	.29	-.07
For intercept β_{2j}			
Intercept for Time 1 identity commitment (γ_{20})	.32	.12	2.65*
For intercept β_{3j}			
Intercept for Time 1 identity exploration (γ_{30})	.68	.11	6.00***
Group teasing (γ_{31})	-.06	.34	-.16
For intercept β_{4j}			
Intercept for gender x identity exploration (γ_{40})	-.05	.26	-.17
Group teasing (γ_{41})	-2.05	.93	-2.21*

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

girls with high initial identity exploration scores. Finally, contrary to Hypothesis 2, peer group control was not a significant predictor of identity exploration.

The Peer Group's Role in Adolescents' Identity Commitment

Fully unconditional model. A significant ICC demonstrated that 18.13% of the variance in Time 2 identity commitment ($\tau = .0829$, $\chi^2(57) = 85.37$, $p = .011$) was between groups. Again, this suggests strong within-group homogeneity on identity commitment and indicates that the peer group context exerts a significant influence on members' identity commitment scores. Thus HLM analysis was deemed necessary to explore predictors of between-peer-group differences in identity commitment.

Individual-level (level-1) analysis. In the individual-level equation, Time 1 identity commitment ($t = 4.01$, $p < .001$) and Time 1 identity commitment x identity exploration ($t = 2.52$, $p = .013$) were significant predictors of Time 2 identity commitment. Because Time 1 identity commitment x identity exploration was involved in a 3-way, cross-level interaction, which I describe below, I do not interpret the 2-way interaction term here. Further, Time 1 identity exploration and gender were not significant predictors of Time 2 identity commitment. Analysis revealed that significant individual-level predictors accounted for 41.08% of the between-peer-group variance in Time 2 identity commitment, and thus a significant amount of between-peer-group variance remained to be accounted for, $\chi^2(58) = 76.87$, $p = .049$.

Group-level (level-2) analysis. In the final group-level equation, there were no significant main effects of peer group identity development or group

interaction predictors on members' Time 2 identity commitment. However, a three-way, cross-level interaction emerged between Time 1 identity commitment, Time 1 identity exploration, and group identity commitment ($t = 1.99, p = .05$). Figure 3 illustrates that for foreclosed and especially for diffused adolescents, there was a positive relation between group identity commitment and Time 2 individual identity commitment.⁶ For achieved adolescents there was a negative relation between group identity commitment and Time 2 individual identity commitment and for moratorium adolescents there was no clear relation between the two variables. Finally, a three-way interaction emerged between Time 1 individual identity commitment, Time 1 individual identity exploration,

⁶ Note that I did not categorize participants into identity statuses. Instead, the regression lines in my graphs are reflective of participants either 1 standard deviation above and below the mean for Time 1 identity exploration and commitment and thus reflect participants who are, for example, more foreclosed (high commitment, low exploration) or diffused (low commitment, low exploration) than most other participants in the sample. Although my regression lines do not include all participants who would be classified into an identity status if a median- or mean-split technique had been employed, for ease of communication, I refer to the four groups distinguished by ± 1 standard deviation on initial identity exploration and commitment as the four different identity statuses.

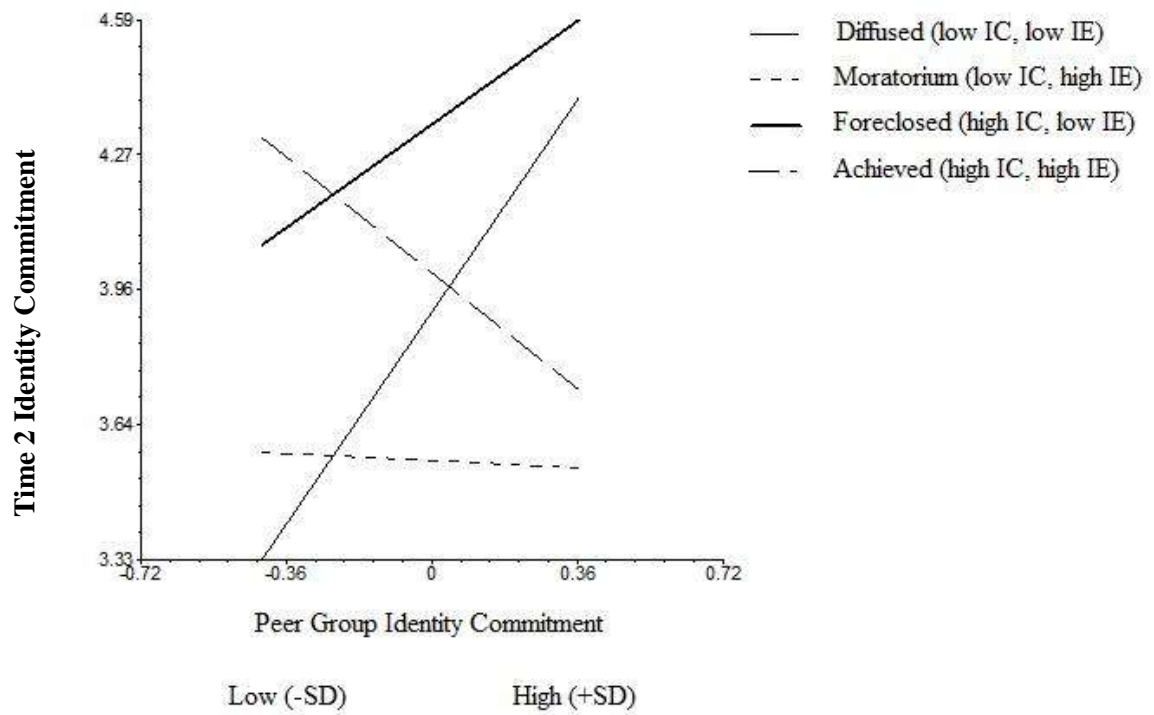


Figure 3.

3-Way Cross-Level Interaction between Time 1 Identity Exploration, Identity Commitment and Group Identity Commitment in Predicting Time 2 Identity Commitment

and group controlling behaviours, ($t = 2.75, p = .008$).⁷ Figure 4 illustrates that, as predicted, for adolescents who were diffused (low commitments, low exploration) at Time 1, higher levels of group controlling behaviours were associated with greater identity commitment at Time 2, but for all other adolescents, higher levels of group controlling behaviours were associated with less identity commitment at Time 2. The final model, with non-significant moderator variables removed, is presented in Table 6.

Summary of hypothesis testing for identity commitment. Hypothesis 1b was partly supported in that members of peer groups that were more highly committed to an identity experienced greater identity commitment over time than members of peer groups that were initially less committed to an identity. However, this relation only held true for adolescents who were initially identity diffused or foreclosed. For initially achieved adolescents, group identity commitments were negatively related to subsequent identity commitment, and for adolescents initially in moratorium, there was no discernable relation between these variables. Further, peer group identity exploration was not a significant predictor of members' identity commitment.

Contrary to Hypothesis 2, peer group openness and teasing of opinions were not significant predictors of adolescents' identity commitment. However, as expected, peer group controlling behaviour was a negative predictor of

⁷ This relation remained significant even when individual-level controlling behaviour was entered as a control variable.

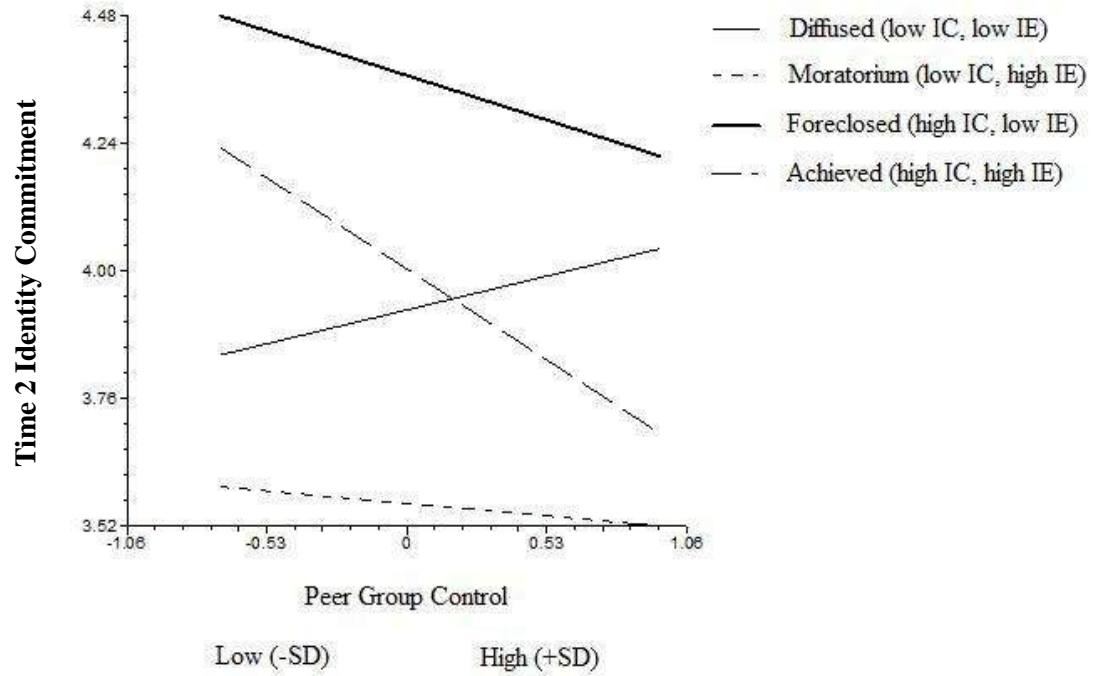


Figure 4.

3-Way Cross-Level Interaction between Time 1 Identity Exploration, Identity Commitment and Group Controlling Behaviours in Predicting Time 2 Identity Commitment

Table 6.

*Hierarchical Linear Model Predicting Time 2 Identity Commitment from Time 1**Individual- and Group-Level Variables*

Variable	B	SE	t-ratio
<i>Time 2 Identity Commitment</i>			
For intercept β_{0j}			
Intercept (γ_{00})	3.96	.08	49***
Group controlling behaviours (γ_{01})	-.10	.13	-.78
Group identity commitment (γ_{02})	.34	.27	1.26
For intercept β_{1j}			
Intercept for Time 1 identity commitment (γ_{10})	.40	.14	2.80**
Group controlling behaviours (γ_{11})	-.24	.18	-1.30
Group identity commitment (γ_{12})	-.62	.30	-2.03*
For intercept β_{2j}			
Intercept for Time 1 identity exploration (γ_{20})	-.25	.14	-1.80
Group controlling behaviours (γ_{21})	-.13	.26	-.50
Group identity commitment (γ_{22})	-1.06	.51	-2.07*
For intercept β_{3j}			
Intercept for commitment x identity exploration (γ_{30})	.59	.20	2.92**
Group controlling behaviours (γ_{31})	.77	.28	2.75**
Group identity commitment (γ_{32})	.75	.38	1.99*

Note. * $p \leq .05$, ** $p < .01$, *** $p < .001$

subsequent identity commitment for all participants except those who were initially identity diffused; for the latter group, group control was a positive predictor of identity commitment.

Discussion

My goal in the present study was to assess peer group contributions to adolescent identity development. Intraclass correlations demonstrated that adolescent peer group members were similar in identity exploration and commitment. This similarity could be due to group selection effects, group socialization effects, or both; however the longitudinal design of this study provided the opportunity to control for Time 1 identity development and examine group socialization effects on adolescent identity exploration and commitment. The findings revealed that peer group identity development and peer group interactional patterns predicted later individual identity exploration and commitment, and also that these relations varied to some extent as a function of adolescents' initial state of identity development. Below, I elaborate further on peer group-level predictors of adolescent identity exploration and commitment. I then use these findings to propose an ideal peer group environment for identity formation in adolescence.

Peer Group Contributions to Adolescent Identity Exploration

Peer group identity exploration. Contrary to expectation, I found that peer group identity exploration did not predict members' later individual identity exploration. Instead, other peer group characteristics, such as strength of group members' identity commitments, were more important. This finding is

surprising and might be attributable to the initial age of adolescents in the present sample. In mid-adolescence, some teens may be just starting to move away from childhood identifications with others and exploring their own personal identity options (Erikson, 1968; Kroger, 2007). Peer group members' identity exploration may not yet be particularly common or salient. In late-adolescence, the combined experience of impending adult decisions, especially concerning post-secondary education and career, and exposure to peer group members who are actively examining different identity options, may be a significant catalyst for identity exploration.

Peer group identity commitment. As hypothesized, I found that members of more identity-committed peer groups engaged in less later personal identity exploration than members of less identity-committed peer groups. It is plausible that in some cases, peer groups that have committed to an identity push their members into premature identity commitments without sufficient exploration of different identity-related options. This result suggests that the presence of peer group members in mid-adolescence who have yet to secure personal identity commitments and instead are still open to different personal values, beliefs and goals (i.e., low identity commitment peers) may confer benefits for adolescent identity exploration.

Peer group interactional processes. I found the expected positive relation between group openness to opinions and identity exploration. A peer group that is open to members' independent ideas and opinions communicates that members' individuality is valued; this may facilitate identity exploration

because group members know that changes to their self-definitions will be accepted by their peer group. Moreover, open peer groups may provide a safe and nonjudgmental discussion forum for members to explore and reflect upon their developing identities; indeed, research by Geldard and Patton (2007) reveals that adolescents identify these as important qualities of listeners during peer disclosure.

Contrary to expectation, I found that for many participants, peer group teasing of opinions was a facilitator of identity exploration. I originally proposed that teasing directed towards group members' task-related opinions would act as a social control mechanism to keep members in line with group norms (Eder, 1991; Shapiro et al., 1991) and communicate to group members that their individuality is not valued by the group. I hypothesized that this behaviour would hinder group members' identity development. However, I found that teasing of opinions facilitated identity exploration in most participants, except girls who had high initial levels of identity exploration.

Rather than communicating to others that their opinions are not valued by the group, some types of teasing may communicate disagreements with group members in a more lighthearted way. This may in turn influence others' attitudes and behaviours without threatening existing relationships (Boxer & Cortés-Conde, 1997). To illustrate, in the following Survivor Task excerpt, Peer 1 uses teasing to communicate her disagreement with Peer 2's idea of selecting a blanket to use as a sail for a sailboat, and is successful in getting her point across likely without upsetting Peer 2 or threatening their relationship.

Peer 2: “You can build a floor and then use the blanket as the sail for the sailboat.”

Peer 1: “Who’s been watching too many cartoons?”

Peer 2: “I’ve watched Survivorman!”

For some adolescents, experiencing peer group teasing directed at their personal beliefs, values or goals may encourage further re-examination or exploration of these aspects of their identities. This type of peer group teasing may help to promote members’ identity exploration, while at the same time help to maintain peer group relationships. Particularly for adolescents who are low in identity exploration, peer group teasing that encourages adolescents to question their existing beliefs, values and/or goals may provide the initial motivation to begin exploring their personal identities.

Male participants in general demonstrated more identity exploration in groups where teasing of opinions was common than in groups where teasing of opinions was more rare. Past research suggests that men engage in more wisecracking and competitive teasing than women in their daily interaction (Lampert & Ervin-Tripp, 1998). Examples of this type of teasing among boys were evident in the Survivor Task, such as, “I guess you could take the axe, but you wouldn’t even be able to lift it.” Men and boys tend to perceive teasing more positively than women and girls (Jones, Newman, & Bautista, 2005; Keltner, Capps, Kring, Young, & Heerey, 2001), and men are more likely to emphasize the bonding nature of teasing than women (Keltner et al., 2001), who tend to bond with peers in other ways such as through personal disclosure

(Coates, 1999). Thus, especially for boys, teasing may serve as an ideal means to communicate disagreements with peer group members' personal beliefs, values and goals, and may ultimately encourage members' identity exploration while maintaining existing relational bonds. Alternatively, for girls, whose transactions may rely less on teasing as a form of social correction, teasing of others' opinions and ideas may be less likely to stimulate identity work, especially if such work is already in progress.

It is also possible that the degree to which peer group members tease each others' opinions is reflective of an underlying peer group characteristic, such as closeness, that may be important for members' identity exploration. Perhaps teasing tends to occur more often in peer groups in which members feel comfortable and close enough with one other to question each other's ideas and opinions. On a similar note, research by Baxter (1992) revealed a positive relation between the amount of self-reported playfulness (including general joking and teasing behaviours) within dyadic friendships and the closeness of these relationships. Thus, in future research, it will be useful test the unique predictive power of peer group teasing on adolescent identity exploration while controlling for other peer group characteristics, such as closeness and security, that may contribute to identity growth.

Unexpectedly, peer group control was not a negative predictor of members' later identity exploration. This result was certainly surprising given that more controlling peer groups likely give members little opportunity to express their individuality. Although it is possible that the interaction task did

not elicit normative rates of controlling behaviour among group members, significant associations between control and identity commitment suggest that sufficient variability in this group behaviour was obtained. In the present study, it appeared that other characteristics of the peer group, such as strength of members' identity commitments, degree of openness to others' opinions, and teasing of opinions were more important for members' later identity exploration. Given that this is the first study to examine such predictions, replication of these findings is needed before conclusions are drawn.

Peer Group Contributions to Adolescent Identity Commitment

Peer group identity commitment. My hypothesis that members of highly identity-committed peer groups would experience greater identity commitment at Time 2 was not confirmed for the whole sample; however, the expected relation *was* obtained for adolescents who were initially low in identity exploration (i.e., foreclosed or diffused). Although commitment to an identity is an essential part of identity formation, personal commitments that are made without prior exploration reflect an identification with or adoption of others' identity choices and lead to identity foreclosure rather than achievement (Marcia, 1966; 1993). It is possible that adolescents in my sample who were not exploring their identities but whose peer group members had clearly formulated identity commitments had more of an opportunity to identify with peer group commitments, and thus decrease their uncertainty about their own personal identities (Hogg, 2000; 2001). For example, diffused (low exploration, low commitment) adolescents whose peers had clear personal goals and beliefs

concerning sex and dating relationships, such as the decision to remain abstinent until marriage, may have been especially likely to begin to identify with similar goals and beliefs.

At least two processes may account for the relation between personal identity commitment and peer group commitment for foreclosed (low exploration, high commitment) adolescents. First, foreclosed adolescents are known to base their identity commitments on the identity commitments of significant others, typically parents (Berzonsky & Neimeyer, 1994; Marcia, 1966), and they may be prone to readily adopt the commitments of their peer group members. Second, given that foreclosed individuals tend to place great importance on protecting or defending their adopted identity commitments (Berzonsky & Neimeyer, 1994; Marcia, 1993), and tend to show strong conviction that their identity commitments are correct (Erikson, 1987), it is also plausible that they seek out peer group members who share similar identity commitments. Further socialization of similar beliefs, values, and goals within these groups may result in foreclosed individuals experiencing even stronger identity commitments as a result of group membership. The confidence and validation that these adolescents receive by having peer group members who share similar identity commitments may deter them from exploring or questioning shared personal beliefs, values, and goals and ultimately from reaching identity achievement.

At present, the above explanations are speculative and require further research to confirm. Specifically, it would be useful for researchers to

empirically examine the degree to which adolescents are initially attracted to or form peer groups that share similar identity commitments, and subsequently determine to what extent adolescents adopt the identity commitments of their peer groups. It is possible that peer group selection and socialization effects differ in strength for adolescents in different stages of identity development. This research would provide valuable insight into the potential reciprocal relation between personal identity development and peer group identity experiences in adolescence.

Compared to foreclosed and diffused teens, the identity commitments of adolescents who were initially identity achieved (i.e., high exploration and commitment) were weakened in more identity-committed peer groups. This suggests that membership within identity-committed peer groups may interfere with achieved individuals' ability to maintain or further develop their existing identity commitments. According to past research, achieved adolescents tend to take an informational approach to formulating their personal identity commitments that involves actively seeking out and reflecting on different identity-related options rather than adopting the identity commitments of significant others (Berzonsky, 1990; Berzonsky & Neimeyer, 1994). For example, when deciding whether or not to be in a dating relationship, these adolescents likely reflect on the benefits and costs of entering a dating relationship versus remaining single, reflect on their feelings and compatibility with the other person, and seek out different points of view before making a decision. Some researchers suggest that it is common for achieved individuals to

experience bouts of less committed self-exploration over time (Marcia, 2002; Stephen et al., 1992) due to new life experiences that cause them to think differently about themselves and integrate these new life experiences into their existing identities, eventually returning to identity achievement (Erikson, 1968; Stephen et al., 1992). If identity exploration is discouraged within the peer group context, it is plausible that identity achieved teens may have difficulties upholding the strength of their identity commitments over time as they encounter new life experiences.

Peer group interactional processes. Consistent with my hypothesis, I found that for most adolescents, controlling peer groups appeared to inhibit later identity commitments. In an attempt to uphold prescribed group attitudes and behaviours (group norms), some peer groups may try to control members' expressions of individuality. Identification of these types of peer groups may help to reveal the nuances of peer group influences on identity development. For example, high-status peer groups may be particularly motivated to maintain internal cohesiveness to uphold their positive reputations (Tarrant, 2002). Strong enforcement of group norms may come at a cost of discouraging members' feelings of individuality and their motivation to form individual identity commitments.

As predicted, diffused adolescents' identity commitments were strengthened by membership in controlling peer groups. Although the formation of identity commitments is crucial for mature identity development (Marcia, 1966; 1993), commitments that have not been thoroughly explored, such as the

commitments made by diffused teens, lead to identity foreclosure rather than achievement. Given the results of the present study, and past research revealing the conforming nature of diffused adolescents (e.g., Adams et al., 1984), there is a strong possibility that especially within controlling peer groups, diffused adolescents identify with the identity commitments of the peer group. This would support Hogg's (2004) assertion that individuals without clear self definitions may be especially likely to conform to the identity of groups in which controlling leaders enforce clear attitudinal and behavioural restrictions. Future research is required to determine if the content of diffused adolescents' identity commitments reflects that of their peer group norms, especially within controlling peer groups.

Contrary to prediction, peer group openness was not related to the strength of members' identity commitments. This result was surprising given that peer groups that are more open to members' individual opinions and ideas likely communicate to members' that their ensuing identity choices will be accepted by the group. Also contrary to hypotheses, group teasing of opinions was not related to the strength of adolescents' later identity commitments. Of course, given that this is the first study to analyze the relation between peer group interactional processes and identity development, future replications of these findings are necessary to determine why group openness and teasing relate to identity exploration but not identity commitment.

Peer group identity exploration. Exploratory analysis revealed that peer group identity exploration was not a significant predictor of adolescents'

later individual identity commitment. Overall then, my findings demonstrated that the degree of peer group members' identity exploration did not significantly contribute to adolescents' later identity development (both commitment and exploration). Again, it will be useful for future research to examine if peer group identity exploration in later-adolescence, a time of heightened exploration and impending identity choices (Klimstra et al., 2010; Kroger et al., 2010), is a significant catalyst for teens' subsequent identity formation.

Peer Group Contributions to Identity Development

The findings of the present study suggest that the peer group may play a role in shaping adolescent identity development. Members of highly committed peer groups were less likely to be exploring their identities 19 to 22 months later, and were more likely to be committed to an identity if they had not been engaging in earlier identity exploration. Identity commitment without exploration is indicative of identification or adoption of others' identity options rather than formation of one's own personal values, beliefs and goals, which is a necessary component of identity achievement, and thus membership in highly committed groups does not seem an optimal context for identity development. Further evidence that this is the case is provided by the weakened identity commitments of adolescents who were initially identity achieved in highly committed groups. Overall then, these results provide initial support that in mid-adolescence, as teens move away from childhood identifications with others (Kroger, 2007) and attempt to explore and build their own personalized identity structures, peer group members who are open to identity-options rather than

secure in their own identity commitments may be best for teens' personal identity growth.

My results also reveal the contribution of peer group interactional processes to members' identity formation. Peer groups that were open to members' personal opinions facilitated identity exploration, and peer groups that exerted less control over group members during discussion facilitated identity commitment. For adolescents who had not engaged in much identity-related activity (diffused), more controlling peer groups contributed to the formation of identity commitments that likely reflected others' (possibly peer group members') identity choices. All in all, these findings support my contention that peer groups that encourage (are open to and do not try to overly control) members' individuality in mid-adolescence may be ideal for identity development. Further, my results revealed that peer group members who express disagreements with one another's opinions in a lighthearted way (teasing) may prompt identity growth.

Individual Contributions to Adolescent Identity Development

Although my hypotheses did not involve person-related effects, it is worth noting that relations between person-level identity development variables, gender and age were generally consistent with past research. Levels of identity commitment were relatively stable over the 19- to 22-month length of the study, and rate of identity commitments both at Time 1 and Time 2 did not differ with age. Levels of identity exploration increased significantly from mid- to later-adolescence. These findings are consistent with past research showing that

identity exploration increases during adolescence, but for many teens, levels of identity commitment remains stable (Klimstra et al., 2010). Further, in line with past research (e.g., Allison & Schultz, 2001; Meeus et al., 1999; Meeus & Deković, 1995), girls in the present study appeared to be more developed in their identities than boys. Girls had higher Time 1 and Time 2 identity commitment than boys and higher Time 2 identity exploration than boys. This may reflect a heightened motivation for teen girls to adopt adult roles, and especially to explore and make commitments in interpersonal relationships (Josselson, Greenberger, & McConochie, 1977).

Limitations

Although this study provides a valuable first glimpse of identity processes in adolescent peer groups, several limitations must be acknowledged. First, given the correlational nature of the present study, causal claims regarding the relation between peer group characteristics and identity development cannot be made. Because I controlled for participants' initial levels of identity development, the results of the present study provide suggestive evidence that peer groups contribute to members' identity development over and above any similarity between group members that is due to peer selection. Confirmation of peer group socialization effects on identity development might be achieved by training peer group members to support each others' individuality and refrain from overly controlling behaviour, and then assessing effects on members' identity exploration and commitment.

Second, peer group size was limited to three members for observation due to time and space constraints and to ensure that raters could clearly observe and transcribe all social exchanges during peer group discussion. Researchers have demonstrated that adolescent peer groups tend to have a median size of 5 to 8 members (Brown & Dietz, 2009), and thus, it is very likely that in some cases, not all group members participated in the observational portion of the study. In spite of this limitation, the peer group interactions I observed did account for identity development in the manner I hypothesized to a considerable extent. If group members develop habitual patterns of interaction, the absence of one or two members may not notably alter the group dynamic. In fact, Rubin and colleagues (2006) suggest that even during individual interactions between peer group members, group attitudinal and behavioural norms still play an important role in governing behaviour. To be confident that authentic peer group dynamic is being captured, though, future researchers should allow for variations in peer group size and include as many group members as possible.

Third, the number of participants who completed my Time 2 follow-up questionnaire ($n = 103$) was much lower than the number of participants who took part in the observational peer group task ($n = 258$). I demonstrated that attrition was not selective based on the self-report questionnaire data, and that my Time 2 sample was representative on the measures of interest for the present study. However, it is possible that due to my small sample size, my analyses did not have sufficient power to detect all existing contributions of peer group

variables to group members' identity development. Thus, it will be beneficial for future researchers to employ more effective strategies to reduce attrition rates.

Given the difficulties I experienced contacting and convincing adolescents to complete Time 2 data collection, I would advise other researchers to collect data within participants' classrooms at each time point. This strategy would eliminate the need to rely on potentially outdated contact information to find each participant. Further, school-based assessments would ensure that most participants would complete data collection at the same time and avoid participant procrastination or forgetfulness. If gathering data within the schools is not possible, I would advise researchers to collect adolescents' permanent contact information, including their home telephone numbers, rather than their cell phone numbers and e-mail addresses. Many adolescents in my sample had changed their e-mail address or cell phone number and this was a significant contributor to the high attrition rate. For older adolescents who may go away to university/college, and/or move away from home during the course of a study, it may be useful to collect social networking (e.g., Facebook) information, given that this information may be more stable than phone numbers and e-mail addresses. Finally, given the technological sophistication of today's youth, online questionnaire packages may be the most comfortable and salient way to reach adolescents with self-report measures. However, researchers should be aware of the time and effort it takes to remind adolescents to complete online measures. There were 12 participants in my sample who consented to complete follow-up testing and were reminded on several occasions to complete the online

questionnaire package, but who never took part. Because today's youth lead busy lives, consumed with school work, extracurricular activities, social engagements, and after-school jobs (Marshall, 2007), it is easy to understand how the e-mailed online questionnaire packages likely became hidden in the depths of many adolescents' inboxes and at the bottom of their "to do" lists. Of course, it is also possible that the Time 2 incentives (a free pizza slice coupon from a local restaurant and entry into a draw to win a \$200 gift certificate for an electronics store) were not substantial or appealing enough to encourage some teens' participation.

Future Directions

The present study was the first to empirically examine the role of the peer group in adolescent identity exploration and commitment (Marcia, 1966). Strengths of the study include a focus on real adolescent peer group members, observational assessment of group interactional processes, and examination of identity development over time. Further, measurement of identity outcomes along continuous dimensions of exploration and commitment provided greater measurement sensitivity (Cohen, 1983) and statistical power (Cohen, 1988) than is produced by traditional categorical (status-based) approaches. As such, this study makes a unique contribution to the field of adolescent identity development.

The current study provides direction for future research on the role of the peer group in identity development. For example, a beneficial extension of the current study would involve conducting a longitudinal study with at least three

time points to assess the trajectory of adolescent identity development over time spans longer than 22 months. Recall that I found that group identity commitments appeared to facilitate formation of unexplored identity commitments for diffused and foreclosed adolescents, and group control appeared to facilitate the formation of unexplored identity commitments for diffused teens. Over time, these adolescents may remain in a state of identity foreclosure (identity commitment without exploration), or may subsequently explore their existing identity choices and reach identity achievement (Klimstra et al., 2001). More frequent and intense identity assessments would provide a means of examining peer group and other factors that might contribute to different identity trajectories. Considering the positive impact of identity achievement on psychological and social adjustment and well-being (Beyers & Seiffge-Krenke, 2010; Dumas et al., 2009; Waterman, 2007), it is imperative to understand how adolescents' social environments may promote or hinder their progression towards identity achievement.

Future longitudinal research could also shed light on the longevity of peer group membership and its influence on identity development. It was not possible to assess the stability of group membership in the present study due to constraints imposed by the ethics committee, but it is possible that longer-lived peer groups might make a greater contribution to members' identity formation than more transient ones. Additionally, although a transition from one peer group to another may temporarily decrease feelings of peer support and belonging, which are likely important for adolescent identity development

(Hamer & Bruch, 1994; Meeus & Deković, 1995), the experience of multiple peer group contexts and contacts may be beneficial for identity growth by affording teens the opportunity to learn about others' identity choices. Indeed, understanding the potential contribution of the stability and variety of peer group associations to adolescent identity development may be a fruitful avenue for future research.

In the present study I chose to employ a general group decision task rather than a more intimate, identity-related task to ensure that I captured opinion sharing and receiving from all group members rather than only those who felt most comfortable disclosing and articulating identity issues. This permitted a naturalistic assessment of peer group interactional styles likely to promote or hinder members' individuality and identity-related disclosures to the group. However, it is also important for future researchers to examine the qualities of peer groups that may promote healthy identity development specifically during identity-related discussion. Co-identity-construction among like-minded peers is likely a key route for peer influence on identity formation. It has been suggested that personal discussion may help adolescent peers to explore, compare, and question different identity options, plan and clarify identity commitments, and ultimately to validate or reject each others' identity commitments (Young, Antal, Bassett, Post, DeVries, & Valach, 1999). It is likely that one of the ways in which the peer group characteristics identified in the present study (openness to others' opinions, teasing of opinions, and controlling behaviour) impact members' identity development is by shaping the

occurrence and content of identity-related discussion. An ideal future study would include both peer group decision task(s) and identity-related discussion in order to examine how peer group dynamics unfold during identity-related discussion, and subsequently how this process may contribute to members' identity formation.

Conclusion

Past theory and research suggest that social relationships contribute to the process of adolescent identity development (e.g., Adams & Marshall, 1996; Erikson, 1968; Meeus & Deković, 1995; Reis & Youniss, 2004; Youniss & Smollar, 1985). In the present study, I have extended this area of research by providing empirical evidence to suggest that peer groups are likely an important part of the identity development process. Specifically, I have identified some key peer group characteristics that may facilitate or impede members' identity development. Further, I found that in some cases, peer group contributions to later identity development depended on adolescents' initial levels of identity exploration and commitment. This speaks to the value of research on the potential contribution of adolescent identity status on peer group experience.

My results revealed that for all adolescents, later identity exploration was greatest when peer groups were initially low in identity commitment. Further, later identity commitments were strongest when peer groups were initially committed to an identity, but only for adolescents who had not yet engaged in identity exploration (diffused and foreclosed adolescents), indicating an adoption or identification with others' identity choices rather than mature

identity construction. In contrast, for initially identity-achieved adolescents, the strength of later personal identity commitments was weaker when peer group members were initially more committed to their individual identities. Group observations helped to reveal the characteristics of peer group interaction that serve to promote or hinder adolescent identity development. For most adolescents, identity development was facilitated by peer group behaviours that support members' individuality (openness to others' opinions and low control) as well as group teasing of opinions. Overall, these results suggest that in mid-adolescence, peer group members who have yet to secure personal identity commitments, who are supportive and accepting of each others' individuality, and who may disagree with each other in a lighthearted way may be ideal for later identity development. This lends support to the notion that identity development in adolescence is not an individual journey, but is partly shaped by the characteristics of adolescents' peer group environments.

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Appendix A

PARENT INFORMATION LETTER

Name of Study: Peer Contributions to Teen Dating Violence

Investigators:

David Wolfe, Ph.D., Centre for Addiction and Mental Health/University of Toronto

Wendy Ellis, Ph.D., King's College at The University of Western Ontario

Jennine Rawana, Ph.D., York University

As a parent of a child attending A.B. Lucas, your child is invited to participate in a research project being conducted with the Thames Valley District School Board. We are seeking your consent and that of your child to participate in a research study, as described below, which is a collaborative effort of Thames Valley District School Board, the Centre for Addiction and Mental Health (CAMH) Centre for Prevention Science, and The University of Western Ontario. Approximately 1200 participants will take part in this study.

Procedures

We are asking students in your son's or daughter's class to complete a survey, which takes approximately 45 minutes to complete. Students will be asked to complete the survey during regular school hours. There will be questions about healthy and unhealthy choices students may be making in their relationships, the use of drugs and/or alcohol, and sexual behaviour. In addition, students will be asked about previous negative experiences that they may have had in the past. There will also be questions about their relationships, with parents, dating partners, peer groups and friends. Teens will be asked about methods that they and others (parents, dating partner and peers) have used to resolve relationship conflicts (e.g., methods of violence, punishment or problem solving). Teens will be asked about feelings of sadness, distress or worries that they may sometimes experience. Information about students' experiences will be obtained in the following manner: The information described above will be collected from participating students twice (once in the Spring and again in the Fall)

Follow-Up

It is important that we follow-up with students in our study, so we may ask them to repeat the survey again 6 months later. We are including this follow-up because we want to know about things that predict changes in student's behaviour. Students will be contacted through their school to arrange for follow-up. If they change schools we will contact you directly or we may ask the school to provide information regarding the school your child has transferred to.

Observations

In order to examine the ways in which teens resolve conflict we will also ask youth if they are interested in participating in an observational study. We will only require a sub-sample of students to participate in the observational study. To be eligible to participate, teens will have to be involved in a dating relationship (at the time of the study) and have a dating partner and two friends who are willing to take part in the observations. During the observation, teens will engage in a discussion and problem solving task with their dating

To show that you have read each page, please sign your initials on each page.

Participant's Initials

partners (20 minutes) and then with their two friends (20 minutes). These sessions will be videotaped. Students may choose not to participate in the observations but still complete the survey portion.

Privacy and Confidentiality

The information your child gives us is confidential, and this confidentiality will be protected to the extent permitted by law. All questionnaires will be coded with a number and kept in a locked room. Your adolescent's name and phone number, which are necessary for us to maintain contact with him or her, will be kept separate from the other information he or she provides. Only the investigators and their research assistants will have access to this information. At the end of the project (January 2007) we will shred all papers with your child's name on it.

The information collected during this research may be used for educational purposes or become part of a published scientific report. This information, however, will ONLY be reported in terms of group findings. NO information will be reported that would allow anybody to be identified individually.

As part of the continuing review of the research, your study records may be assessed on behalf of the Research Ethics Board and, if applicable, by the Health Canada Therapeutic Products Program. A person from the research ethics team may contact you (if your contact information is available) to ask you questions about the research study and your consent to participate. The person assessing your file or contacting you must maintain your confidentiality to the extent permitted by law.

Voluntary Participation and Potential Risks Associated with Participation

It is possible your child might be uncomfortable or embarrassed about answering personal questions on the survey. Participation in the study is voluntary. He or she will not be required to answer any question that makes him or her uncomfortable. You or your child may refuse to participate, refuse to answer any questions, or withdraw from the study at any time with no effect on his or her school involvement.

Potential Benefits Associated with Participation

Dating and developing healthy relationships are topics that are interesting to many teens. We think that your child will enjoy completing these surveys as they ask questions about topics that are important to teens. In addition, this research may provide significant social and scientific benefits through the knowledge that will be gained about healthy teen relationships.

Compensation

There is no compensation for completing the survey. Students will be compensated \$20 for their time if they participate in the observational component.

To show that you have read each page, please sign your initials on each page.

Participant's Initials

This letter is yours to keep. Please complete the attached consent and assent forms and give them to your child to return to his or her teacher. If you have any questions about this research, please feel free to contact:

David A. Wolfe, Ph.D.
RBC Chair in Children's Mental Health
Head, CAMH Centre for Prevention Science, London, ON
Professor of Psychology & Psychiatry, University of Toronto
Centre for Addiction and Mental Health

Wendy E. Ellis, Ph.D.
Assistant Professor, King's College at The University of Western Ontario

This research is funded by the Canadian Institutes of Health Research

If you have questions about the conduct of this study or your rights as a research subject you may contact Dr. Padraig Darby, Chair, Research Ethics Board, Centre for Addiction and Mental Health.

To show that you have read each page, please sign your initials on each page.
Participant's Initials

PARENTAL CONSENT FORM

Study: Peer Contributions to Teen Dating Violence

Please sign your name below if you agree to allow your child to participate in this research. By signing this form, you are agreeing to: Have your child complete a survey twice, once in Fall 2007 and once in Spring 2008 and if selected, take part in video taped 10-minute interaction with their dating partner and/or peer group member(s).

I HAVE READ THE INFORMATION PROVIDED ABOUT THIS PROJECT AND HAD MY QUESTIONS ANSWERED TO MY SATISFACTION. I VOLUNTARILY AGREE TO ALLOW MY CHILD TO PARTICIPATE IN THIS STUDY.

Name (please print)

Name of child (please print)

*

Signature of parent or guardian

Date

Principal Investigators:

David A. Wolfe, Ph.D.
RBC Chair in Children's Mental Health
Head, CAMH Centre for Prevention Science, London, ON
Professor of Psychology & Psychiatry, University of Toronto

Wendy E. Ellis, Ph.D.
Assistant Professor, King's College at The University of Western Ontario

If you have questions about the conduct of this study or your rights as a research subject you may contact Dr. Pdraig Darby, Chair, Research Ethics Board, Centre for Addiction and Mental Health.

I have been given a copy of this form to keep.

To show that you have read each page, please sign your initials on each page.
Participant's Initial

Appendix B

YOUTH INFORMATION LETTER

Name of Study: Peer Contributions to Teen Dating Violence

Investigators:

David Wolfe, Ph.D., Centre for Addiction and Mental Health/University of Toronto
 Wendy Ellis, Ph.D., King's College at The University of Western Ontario
 Jennine Rawana, Ph.D., York University

As a student in A.B. Lucas/Medway High you are invited to participate in a research project being conducted with the Thames Valley District School Board. We are seeking your agreement to participate in a research study, as described below. Students from your school in grades 9, 10, 11 will be asked to participate in this study, which is a collaborative effort of Thames Valley District School Board, CAMH Centre for Prevention Science, and The University of Western Ontario. Approximately 1200 participants will take part in this study.

Program Description

We are asking students to complete a survey, which takes approximately 45 minutes to complete. If you agree to participate, you will be asked to complete the survey during regular school hours. There will be questions about healthy and unhealthy choices you may be making about relationships, the use of drugs and/or alcohol, and sexual behaviour. There will also be questions about your relationships, with parents, dating partners, peer groups and friends. You will be asked about methods that you and others (parents, dating partner and peers) have used to resolve relationship conflicts (e.g., methods of violence, punishment or problem solving). In addition, there will be questions about feelings of distress, and stressful life events that you might have experienced. Information about your experiences will be obtained in the following manner:

The information described above will be collected from participating students twice (once in the Spring and again in the Fall).

Follow-Up

It is important that we follow-up students in our study, so we may ask you to repeat the survey again 6 months later. You will be contacted through your school to arrange for follow-up. If you change schools we will contact you directly or may ask the school to provide information regarding the school you have transferred to.

Observations

In order to examine the ways in which teens resolve conflict, we will also ask if you are interested in participating in an observational study. We will only need a sub-sample of students to participate in the observational study. To be eligible to participate you will have to be involved in a dating relationship (at the time of the study) and have a dating

To show that you have read each page, please sign your initials on each page.

Participant's Initials

partner and two friends who are also willing to take part in the study. During the observation, you will engage in a discussion and problem solving task with your dating partner (20 minutes) and then with your two friends (20 minutes). These sessions will be videotaped. You may choose not to participate in the observations but still complete the survey portion.

Privacy and Confidentiality

The information you give us is confidential, and this confidentiality will be protected to the extent permitted by law. If you tell one of the researchers about a child being hurt, or that you intend to hurt yourself or someone else, we are required to contact the proper authorities.

Your survey responses will not be linked back to your name. All questionnaires will be coded with a number and kept in a locked room. Your name and address and the contact information, which is necessary for us to keep contact with study participants, will be kept separate from the other information you provide. At the end of the program we will shred any papers with your name on it. The information collected during this research may be used for educational purposes or become part of a published scientific report. This information will only be reported in terms of group findings. NO information will be reported that would allow anyone to be identified individually.

As part of the continuing review of the research, your study records may be assessed on behalf of the Research Ethics Board and, if applicable, by the Health Canada Therapeutic Products Program. A person from the research ethics team may contact you (if your contact information is available) to ask you questions about the research study and your consent to participate. The person assessing your file or contacting you must maintain your confidentiality to the extent permitted by law.

Voluntary Participation and Potential Risks Associated with Participation

It is possible you might feel uncomfortable or embarrassed about answering personal questions on the survey. Even if your parent has signed the consent form allowing you to participate, your participation in the study is voluntary. You will not be required to answer any question that makes you uncomfortable. You may refuse to participate, refuse to answer any questions, or withdraw from the study at any time with no effect on your academic status.

Potential Benefits Associated with Participation

Dating and developing healthy relationships are topics that are interesting to many teens. We think that you will enjoy completing these surveys as they ask questions about topics that are important to teens. In addition, this research may provide significant social and scientific benefits through the knowledge that will be gained about healthy teen relationships.

To show that you have read each page, please sign your initials on each page.
Participant's Initials

Compensation

There is no compensation for completing the surveys. Students will be compensated \$20 for their time if they participate in the observational component.

This letter is yours to keep. Please sign the attached assent form, and return it and the parental consent form to your teacher. If you have any questions about this research, please feel free to contact:

David A. Wolfe, Ph.D.
RBC Chair in Children's Mental Health
Head, CAMH Centre for Prevention Science, London, ON
Professor of Psychology & Psychiatry, University of Toronto

Wendy E. Ellis, Ph.D.
Assistant Professor, King's College at The University of Western Ontario

If you have questions about the conduct of this study or your rights as a research subject you may contact Dr. Padraig Darby, Chair, Research Ethics Board, Centre for Addiction and Mental Health.

To show that you have read each page, please sign your initials on each page.
Participant's Initials

YOUTH ASSENT FORM

Study: Peer Contributions to Teen Dating Violence

Please sign your name below if you agree to participate in this research. By signing this form, you are agreeing to: Complete a survey twice, once in Fall 2007 and once in Spring 2008 and to be contacted to take part in an observational study with your dating partner and/or peer group member(s).

I HAVE READ THE INFORMATION PROVIDED ABOUT THIS PROJECT AND HAD MY QUESTIONS ANSWERED TO MY SATISFACTION. I VOLUNTARILY AGREE TO PARTICIPATE IN THIS STUDY, AND UNDERSTAND THAT I MAY WITHDRAW AT ANY TIME.

*

Name (please print)

Signature

Date

Principal Investigators:

David A. Wolfe, Ph.D.
 RBC Chair in Children's Mental Health
 Head, CAMH Centre for Prevention Science, London, ON
 Professor of Psychology & Psychiatry, University of Toronto

Wendy E. Ellis, Ph.D.
 Assistant Professor, King's College at The University of Western Ontario

If you have questions about the conduct of this study or your rights as a research subject you may contact Dr. Pdraig Darby, Chair, Research Ethics Board, Centre for Addiction and Mental Health.

I have been given a copy of this form to keep.

To show that you have read each page, please sign your initials on each page.
 Participant's Initial

Appendix C



INFORMATION LETTER AND CONSENT FORM

Observing the Relation between Peer Group Interaction and the Trajectory of Adolescent Identity Development: A Longitudinal Analysis

Dear Student,

In 2007-2008 you participated in our study entitled "Peer Contributions to Teen Dating Violence". This purpose of this study was to examine how teenagers' peer groups may influence abusive behaviour in dating relationships. When you completed your last survey, you indicated that you would be willing to be contacted for a future study. We are writing to invite you to participate in the next phase of this study, which would involve taking a short on-line survey. In this survey, you would answer some of the same questions you answered previously, concerning the quality of your relationship with your peer group, how you feel about yourself, and your thoughts about various aspects of life, such as your occupation, politics, friendships, and family. By asking you to complete these questionnaires again, we will learn more about how adolescents' experiences in their peer groups might influence their thoughts and feelings over time.

The survey will take approximately 20 minutes to complete and you may fill it out at your convenience. There are no known risks associated with participating in this research. Once we receive the consent forms from you and your parent or guardian, we will e-mail you a secure link that will take you to the online survey. If you do not have access to the internet, or if you would feel more comfortable filling out a paper and pencil survey, please let us know and we will gladly mail a paper copy to you.

Please note that your survey responses will remain confidential to the extent permitted by law. Only the investigators and our research assistants will have access to your survey information, and we will permanently delete this information as soon as the survey is printed. All surveys will be coded with a number and kept in a locked room. Your name and phone number, which we must maintain to contact you, will be kept separate from your study information. At the end of the project (November 2009) we will shred all identifying information. The information collected during this research may be used for educational purposes or become part of a published scientific report. However, you never will be mentioned by name.

The Research Ethics Board at the University of Western Ontario may contact you directly (if your contact information is available) to ask you questions about the research study and your consent to participate. The person assessing your file or contacting you must maintain your confidentiality to the extent permitted by law.



Participation in this study is voluntary. You may refuse to participate, refuse to answer any questions, or withdraw from the study at any time. Your parents or guardians also may refuse to allow you to participate or withdraw their consent at any time. If you have questions about your rights as a research subject you may contact The Office of Research Ethics, The University of Western Ontario.

Students will be compensated for their time with a coupon for a free slice of pizza from Pizza Pizza. Coupons will be mailed to all participants. They will also be entered into a draw to win an iPod Touch.

Thank you very much for your consideration. Feel free to print this letter to keep for your records. If you have any questions about this research, please feel free to contact:

Lynne Zarbatany, Ph.D.
Associate Professor
Department of Psychology
The University of Western Ontario

Tara M. Dumas, M.A.
Ph.D. Candidate
Department of Psychology
The University of Western Ontario



Consent to Participate

Observing the Relation between Peer Group Interaction and the Trajectory of Adolescent Identity
Development: A Longitudinal Analysis

By clicking the box below, I acknowledge that I have read the
Your Name
Information Letter and I agree to participate in the study. All questions have been
answered to my satisfaction.

Click here
to consent

Date

Appendix D

PARENTAL AND YOUTH INFORMATION LETTER**Observing the Relation between Peer Group Interaction and the Trajectory of Adolescent Identity Development: A Longitudinal Analysis**

Dear Parent or Guardian,

Please note that in the information letter below, the words “you” and “your” refer to the participant in the study, and NOT the parent or guardian who is signing the consent form for the participant.

Dear Student,

In 2007-2008 you participated in our study entitled “Peer Contributions to Teen Dating Violence”. This purpose of this study was to examine how teenagers’ peer groups may influence abusive behaviour in dating relationships. When you completed your last survey, you indicated that you would be willing to be contacted for a future study. We are writing to invite you to participate in the next phase of this study, which would involve taking a short on-line survey. In this survey, you would answer some of the same questions you answered previously, concerning the quality of your relationship with your peer group, how you feel about yourself, and your thoughts about various aspects of life, such as your occupation, politics, friendships, and family. By asking you to complete these questionnaires again, we will learn more about how adolescents’ experiences in their peer groups might influence their thoughts and feelings over time.

The survey will take approximately 20 minutes to complete and you may fill it out at your convenience. There are no known risks associated with participating in this research. Once we receive the consent forms from you and your parent or guardian, we will e-mail you a secure link that will take you to the online survey. If you do not have access to the internet, or if you would feel more comfortable filling out a paper and pencil survey, please let us know and we will gladly mail a paper copy to you.

Please note that your survey responses will remain confidential to the extent permitted by law. Only the investigators and our research assistants will have access to your survey information, and we will permanently delete this information as soon as the survey is printed. All surveys will be coded with a number and kept in a locked room. Your name and phone number, which we must maintain to contact you, will be kept separate from your study information. At the end of the project (November 2009) we will shred all identifying information. The information collected during this research may be used for

educational purposes or become part of a published scientific report. However, you never will be mentioned by name.

The Research Ethics Board at the University of Western Ontario may contact you directly (if your contact information is available) to ask you questions about the research study and your consent to participate. The person assessing your file or contacting you must maintain your confidentiality to the extent permitted by law.

Participation in this study is voluntary. You may refuse to participate, refuse to answer any questions, or withdraw from the study at any time. Your parents or guardians also may refuse to allow you to participate or withdraw their consent at any time. If you have questions about your rights as a research subject you may contact The Office of Research Ethics, The University of Western Ontario.

Students will be compensated for their time with a coupon for a free slice of pizza from Pizza Pizza. Coupons will be mailed to all participants. They will also be entered into a draw to win a \$200 Best Buy gift certificate.

Thank you very much for your consideration. This letter is yours to keep. Please complete the attached consent form and mail it back to us in the envelope provided. If you have any questions about this research, please feel free to contact:

Lynne Zarbatany, Ph.D.
Associate Professor
Department of Psychology
The University of Western Ontario

Tara M. Dumas, M.A.
Ph.D. Candidate
Department of Psychology
The University of Western Ontario

PARENTAL CONSENT AND YOUTH ASSENT FORM

**Observing the Relation between Peer Group Interaction and the Trajectory
of Adolescent Identity Development: A Longitudinal Analysis**

I have read the Information Letter, have had the nature of Dr. Zarbatany's study explained

to me and I agree that _____ may participate in the study.
Student's Name

All questions have been answered to my satisfaction.

Parent's Signature

Date

Student's Signature

Lynne Zarbatany, Ph.D.
Associate Professor
Department of Psychology
The University of Western Ontario

Tara M. Dumas, M.A.
Ph.D. Candidate
Department of Psychology
The University of Western Ontario

If you have questions about your rights as a research subject you may contact:
The Office of Research Ethics
The University of Western Ontario

Appendix E

SURVIVOR TASK

Imagine you are stranded alone on a tropical island for one month, what things would you bring? Using the list below write down 3 items that you would like to bring.

First, do this alone – with no talking from your friends.

1. Rope
2. Sunscreen
3. Soap
4. Toothbrush
5. Razor
6. Pots
7. Knife
8. Blanket
9. Duct Tape
10. First Aid Kit
11. Water Purifier
12. Flashlight
13. Fishing Gear
14. Axe
15. Books

1. _____

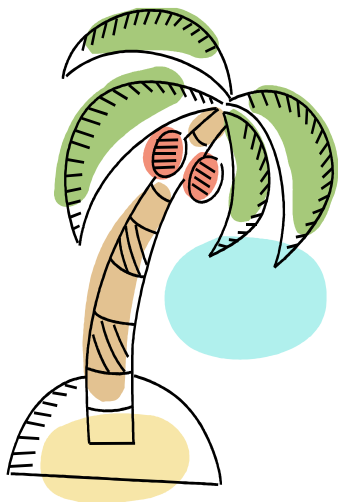
Why?

2. _____

Why?

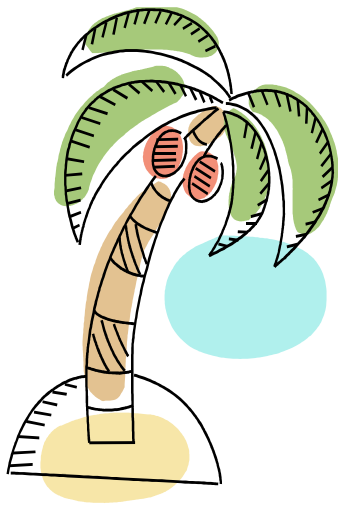
3. _____

Why?



Again imagine you are stranded alone on a tropical island for one month. Now, as a group, come to a decision concerning which 3 items you would want with you. Choose from the same list, which is provided below. Write down these 3 items and discuss why these would be the most important!

1. Rope
2. Sunscreen
3. Soap
4. Toothbrush
5. Razor
6. Pots
7. Knife
8. Blanket
9. Duct Tape
10. First Aid Kit
11. Water Purifier
12. Flashlight
13. Fishing Gear
14. Axe
15. Books



1. _____

Why?

2. _____

Why?

3. _____

Why?

Appendix F

33 Russell Street
Toronto, Ontario
Canada M5S 2S1
Tel: 416-535-8501

33 rue Russell
Toronto (Ontario)
Canada M5S 2S1
Tél : 416-535-8501

www.camh.net



Centre for Addiction and Mental Health
Centre de toxicomanie et de santé mentale

PROTOCOL REFERENCE #135/2007

July 16, 2007

David Wolfe, PhD, ABPP
Department of Psychiatry
Child, Youth and Family Program
Centre for Addiction and Mental Health
100 Collip Circle, Suite 100
Toronto, ON N6G 4X8

Dear Dr. Wolfe:

Re: Research protocol #135/2007 entitled, "Peer Contributions to Teen Dating Violence: Implications for Mental Health" by Wolfe D, Ellis W

We are writing to advise you that the Centre for Addiction and Mental Health Research Ethics Board (CAMH REB) has granted approval to the above-named research study for a period of one year from the date of this letter¹. IF THE STUDY IS EXPECTED TO CONTINUE BEYOND THE EXPIRY DATE, YOU ARE RESPONSIBLE FOR ENSURING THE STUDY RECEIVES RE-APPROVAL BY SUBMITTING THE CAMH REB "ANNUAL RENEWAL OF ETHICS APPROVAL" FORM ON OR BEFORE **June 01, 2008**. Should the study be completed prior to the annual renewal date, please submit a final report. **The level of continuing review for this study is Level 2**².

A PAHO/WHO
Collaborating Centre
Un Centre collaborateur
OPS/OMS

Affiliated with the
University of Toronto
Affilié à l'Université
de Toronto

The Parent Information Letter and the Youth Information Letter, revised on June 14, 2007, have been approved and are attached. **Subjects should receive a copy of their consent form.**

During the course of the research, any significant deviations from the approved protocol (that is, any deviation which would lead to an increase in risk or a decrease in benefit to human subjects) and/or any unanticipated developments within the research should be brought to the attention of the Research Ethics Office. Best wishes for the successful completion of your project.

Yours sincerely,

Susan Pilon, MHSc
Manager, Research Ethics Office, CAMH

SP/lw

Encl.

cc: P. Darby G. Czukar S. Kapur

¹ CAMH Investigators are reminded that should they leave CAMH, they are required to inform the Research Ethics Board of the status of any on-going research. If a study is to be closed or transferred to another facility, the REB must be informed and any advertisements must be discontinued.

² Level 2: Review of routine annual reports, changes and amendments to the approved protocol, adverse events, filing of a final report and audit of study files/documentation.

Appendix G

**Office of Research Ethics**

The University of Western Ontario
 Room 4180 Support Services Building, London, ON, Canada N6A 5C1
 Telephone: (519) 661-3036 Fax: (519) 850-2466 Email: ethics@uwo.ca
 Website: www.uwo.ca/research/ethics

Use of Human Subjects - Ethics Approval Notice**Principal Investigator:** Dr. L. Zarbatany**Review Number:** 16461S**Review Level:** Expedited**Review Date:** September 02, 2009**Protocol Title:** Observing the Relation between Peer Group Interaction and the Trajectory of Adolescent Identity Development: A Longitudinal Analysis**Department and Institution:** Psychology, University of Western Ontario**Sponsor:** Graduate Thesis Research Award**Ethics Approval Date:** September 11, 2009**Expiry Date:** December 31, 2009**Documents Reviewed and Approved:** UWO Protocol, Letter of Information and Consent, Paper-based Survey *only***Documents Received for Information:** CAMH Approval Notice #135/2007, CAMH Protocol Submission

This is to notify you that The University of Western Ontario Research Ethics Board for Non-Medical Research Involving Human Subjects (NMREB) which is organized and operates according to the Tri-Council Policy Statement: Ethical Conduct of Research Involving Humans and the applicable laws and regulations of Ontario has granted approval to the above named research study on the approval date noted above.

This approval shall remain valid until the expiry date noted above assuming timely and acceptable responses to the NMREB's periodic requests for surveillance and monitoring information. If you require an updated approval notice prior to that time you must request it using the UWO Updated Approval Request Form.

During the course of the research, no deviations from, or changes to, the study or consent form may be initiated without prior written approval from the NMREB except when necessary to eliminate immediate hazards to the subject or when the change(s) involve only logistical or administrative aspects of the study (e.g. change of monitor, telephone number). Expedited review of minor change(s) in ongoing studies will be considered. Subjects must receive a copy of the signed information/consent documentation.

Investigators must promptly also report to the NMREB:

- a) changes increasing the risk to the participant(s) and/or affecting significantly the conduct of the study;
- b) all adverse and unexpected experiences or events that are both serious and unexpected;
- c) new information that may adversely affect the safety of the subjects or the conduct of the study.

If these changes/adverse events require a change to the information/consent documentation, and/or recruitment advertisement, the newly revised information/consent documentation, and/or advertisement, must be submitted to this office for approval.

Members of the NMREB who are named as investigators in research studies, or declare a conflict of interest, do not participate in discussion related to, nor vote on, such studies when they are presented to the NMREB.

Chair of NMREB: Dr. Jerry Paquette

Ethics Officer to Contact for Further Information			
<input type="checkbox"/> Grace Kelly (grace.kelly@uwo.ca)	<input type="checkbox"/> Janice Sutherland (jsutherl@uwo.ca)	<input type="checkbox"/> Elizabeth Wambolt (ewambolt@uwo.ca)	<input checked="" type="checkbox"/> Denise Grafton (dgrafton@uwo.ca)

This is an official document. Please retain the original in your files.

cc: ORE File



Office of Research Ethics

The University of Western Ontario
 Room 4180 Support Services Building, London, ON, Canada N6A 5C1
 Telephone: (519) 661-3036 Fax: (519) 850-2466 Email: ethics@uwo.ca
 Website: www.uwo.ca/research/ethics

Use of Human Subjects - Ethics Approval Notice

Principal Investigator: Dr. L. Zarbatany

Review Number: 16461S

Review Date: October 28, 2009

Revision Number: 1

Review Level: Expedited

Protocol Title: Observing the Relation between Peer Group Interaction and the Trajectory of Adolescent Identity Development: A Longitudinal Analysis

Department and Institution: Psychology, University of Western Ontario

Sponsor: Graduate Thesis Research Award

Ethics Approval Date: November 17, 2009

Expiry Date: December 31, 2009

Documents Reviewed and Approved: On-Line Survey

Documents Received for Information:

This is to notify you that The University of Western Ontario Research Ethics Board for Non-Medical Research Involving Human Subjects (NMREB) which is organized and operates according to the Tri-Council Policy Statement: Ethical Conduct of Research Involving Humans and the applicable laws and regulations of Ontario has granted approval to the above referenced revision(s) or amendment(s) on the approval date noted above.

This approval shall remain valid until the expiry date noted above assuming timely and acceptable responses to the NMREB's periodic requests for surveillance and monitoring information. If you require an updated approval notice prior to that time you must request it using the UWO Updated Approval Request Form.

During the course of the research, no deviations from, or changes to, the study or consent form may be initiated without prior written approval from the NMREB except when necessary to eliminate immediate hazards to the subject or when the change(s) involve only logistical or administrative aspects of the study (e.g. change of monitor, telephone number). Expedited review of minor change(s) in ongoing studies will be considered. Subjects must receive a copy of the signed information/consent documentation.

Investigators must promptly also report to the NMREB:

- changes increasing the risk to the participant(s) and/or affecting significantly the conduct of the study;
- all adverse and unexpected experiences or events that are both serious and unexpected;
- new information that may adversely affect the safety of the subjects or the conduct of the study.

If these changes/adverse events require a change to the information/consent documentation, and/or recruitment advertisement, the newly revised information/consent documentation, and/or advertisement, must be submitted to this office for approval.

Members of the NMREB who are named as investigators in research studies, or declare a conflict of interest, do not participate in discussion related to, nor vote on, such studies when they are presented to the NMREB.

Chair of NMREB: Dr. Jerry Paquette

Ethics Officer to Contact for Further Information			
<input type="checkbox"/> Grace Kelly (grace.kelly@uwo.ca)	<input type="checkbox"/> Janice Sutherland (jsuther@uwo.ca)	<input type="checkbox"/> Elizabeth Wambolt (ewambol@uwo.ca)	<input checked="" type="checkbox"/> Denise Grafton (dgrafton@uwo.ca)

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cc: ORE File

Tara M. Dumas

Curriculum Vitae

June 2011

Department of Psychology
The University of Western Ontario
Westminster Hall, 361 Windermere Road
London, Ontario, Canada, N6G 2K3

EDUCATION

- 2007-2011 **Doctor of Philosophy**, Psychology
The University of Western Ontario, London, ON
Thesis: An Observational Assessment of Peer Group
Contributions to Adolescent Identity Development
Advisor: Dr. Lynne Zarbatany
- 2005-2007 **Master of Arts**, Psychology
Wilfrid Laurier University, Waterloo, ON
Thesis: Gaining From Loss: Adolescent Low Point Narratives,
Identity Development and Well-Being
Advisor: Dr. Michael Pratt
- 2001-2005 **Bachelor of Arts**, Honors Psychology
Wilfrid Laurier University, Waterloo, ON
Thesis: Optimism in Students' Turning Point Narratives and
the Transition to University
Advisor: Dr. Michael Pratt

PUBLICATIONS

- Dumas, T. M.**, Lawford, H., Tieu, T., & Pratt, M. W. (2009). Positive parenting and its relation to low point narration and identity status in emerging adulthood: A longitudinal study. *Developmental Psychology, 45*, 1531-1544.

SUBMITTED MANUSCRIPTS

- Ellis, W. E., **Dumas, T. M.**, Mahdy, J., & Wolfe, D. *Observations of adolescent peer group interactions as a function of within and between group status.*

SYMPOSIA

- Pratt, M. W., Norris, J. E., Alisat, S., & **Dumas, T. M.** (2011, April) *Family and personal life narratives predict aspects of adjustment trajectories from adolescence to emerging adulthood.* The 2011 Society for Research on Child Development Biennial Meeting, Montreal, QU, Canada.

Ellis, W. E. & **Dumas, T. M.** (2009, February). *Peer influence mechanisms in high status adolescent peer groups*. Presented by the second author at the Society for Research in Child Development Biennial Meeting, Denver, CO, USA.

Dumas, T. M., Lawford, H., Tieu, T., & Pratt, M. W. (2008, March). *Positive Parenting and Its Impact on Identity Status in Young Adulthood: A Longitudinal Study*. The Society for Research on Adolescence Biennial Meeting, Chicago, IL, USA.

CONFERENCE PRESENTATIONS

Gomez, J., & **Dumas, T. M.** (2011, June) *Identity exploration and conflict resolution in romantic and dating relationships: Observing disclosure to close friends*. Canadian Psychological Association Annual Conference, Toronto, ON, Canada.

Boyko, L. M., **Dumas, T. M.**, Zabatany, L., Ellis, W., & Chen, X. (2011, April) *Emotional adjustment of child and early adolescent peer group members: Does status matter?* The 2011 Society for Research on Child Development Biennial Meeting, Montreal, QU, Canada.

Dumas, T. M., Ellis, W. E., & Zabatany, L. (2011, April) *The role of the peer group in adolescent identity development: A longitudinal, observational study*. The 2011 Society for Research on Child Development Biennial Meeting, Montreal, QU, Canada.

Zabatany, L., **Dumas, T. M.**, Ellis, W. E., & Chen, X. (2011, April) *High status with peers as a predictor of narcissism in late childhood and early adolescence*. The 2011 Society for Research on Child Development Biennial Meeting, Montreal, QU, Canada.

Dumas, T. M., Mahdy, J., Ellis, W. E., Zabatany, L., & Kinal, M. (2010, March). *Peer Group Social Status and Individual Status within the Peer Group as Predictors of Adolescent Leadership Styles*. The Society for Research on Adolescence Biennial Meeting, Philadelphia, PA, USA.

Dumas, T. M., Ellis, W. E., & Zabatany, L. (2009, February). *Observing the relation between adolescent identity development and the quality of participation in peer group discussion*. The Society for Research in Child Development Biennial Meeting, Denver, CO, USA.

Lawford, H., **Dumas, T. M.**, Davis, N., & Pratt, M. W. (2008, March). *Stories of Morality and Moral Courage and Their Association with Concern for Future Generations in Emerging Adulthood*. The Society for Research on Adolescence Biennial Meeting, Chicago, IL, USA.

- Dumas, T. M., & Pratt, M. W.** (2007, June). *Learning from life's turning points: Family parenting, depth of learning in stories, and young adult identity development*. Canadian Psychological Association Annual Conference, Ottawa, ON, Canada.
- Runner up for the *Elinor Ames Award*, for the best student presentation in the Developmental Psychology section.
- Dumas, T. M., Soucie, K. M., & Pratt, M. W.** (2007, June). *Factors that influence the understanding of moral courage in emerging adulthood*. Canadian Psychological Association Annual Conference, Ottawa, ON, Canada.
- Runner up for the *Elinor Ames Award*, for the best student presentation in the Developmental Psychology section.
- Dumas, T. M., Tieu, T., & Pratt, M. W.** (2007, February). *"Why me?": Narrative coherence in emerging adults' low point narratives, emotional adjustment and cognitive development*. The 3rd Conference on Emerging Adulthood, Tucson, AZ, USA.
- Tieu, T., **Dumas, T. M., & Pratt, M. W.** (2007, February). *Do you know what I mean?: Identity status in adolescence and life story coherence in emerging adulthood*. The 3rd Annual Conference on Emerging Adulthood, Tucson, AZ, USA.
- Dumas, T. M. & Pratt, M.** (2006, June). *"Is Your Course Work Unfinished or Almost Complete": Optimism in Students' Turning Point Stories and the Transition to University*. Canadian Psychological Association Annual Conference. Calgary, AB, Canada.
- Runner up for the *Elinor Ames Award*, for the best student presentation in the Developmental Psychology section.

STUDENTS SUPERVISED

Jennifer Gomez, Honours Thesis (2010-2011)

Thesis: Identity exploration and conflict resolution in romantic and dating relationships: Observing disclosure to close friends.

Lisa Bay, Honours Thesis (2009-2010)

Thesis: Peer Group Belongingness as a Precursor to Adolescent Identity Development

Jasmine Mahdy, Honours Thesis (2008-2009)

Thesis: The Relation between Adolescent Peer Group Social Status, Observed Leadership and Socially Dominant Behaviours

ACADEMIC AWARDS

- 2010 SSHRC Doctoral Award (\$20,000 for 1 year) – Social Science and Humanities Research Council
- 2008 Western Graduate Thesis Research Award (\$750 for 1 year)
- 2007 Western Graduate Research Scholarship (\$9000 annually for 3 years)
- 2006 WLU Graduate Scholarship (\$2,000 for 1 year)
- 2005 WLU Graduate Scholarship (\$1,000 for 1 year)
- 2001 WLU Undergraduate Entrance Scholarship (\$1,250 for 1 year)

TEACHING EXPERIENCE

Lecturer

University of Western Ontario (Summer 2009, 2010 & 2011)

Introduction to Developmental Psychology

Teaching Assistant

University of Western Ontario

Introduction to Psychology (Winter 2008 & Fall 2010)

- Task include marking exams and assignments, presenting review lectures and holding weekly office hours.

Research in Developmental Psychology (Fall 2007, 2009, & Winter 2010)

- Task include teaching weekly labs, marking research papers and holding weekly office hours.

Child Development (Fall 2008 & 2009)

- Responsible for teaching weekly labs, creating exams, marking exams and assignments and holding weekly office hours.

Psychological Aspects of Life-Skills (Summer 2008)

- Responsible for marking exams and holding weekly office hours.

Wilfrid Laurier University

Advanced Graduate Behavioural Statistics (Fall 2006)

- Responsible for grading (and creating some) assignments and quizzes, proctoring exams and holding weekly office hours.

Sport Psychology (Fall 2006)

- Responsible for grading papers and exams.

Social Psychology (Winter 2006)

- Responsible for grading assignments and exams and holding weekly office hours.

Research in Social Psychology (Fall 2005)

- Responsible for grading assignments and research papers and holding weekly office hours.

Guest Speaker

11/2009 Course: Child Development; Topic: Identity Development; UWO

- 02/2009 Course: Seminar in Developmental Psychology; Topic: Low Point Narration, Identity Development, and Emotional Adjustment; WLU
- 02/2007 Course: Seminar in Developmental Psychology; Topic: Identity Development and the Narrative Life Story; WLU
- 03/2006 Course: Social Psychology; Topic: Interpersonal Relationships; WLU

RESEARCH EXPERIENCE

Research Assistant

- Dr. Wendy Ellis, Centre for Addiction and Mental Health, London, ON and King's College at the University of Western Ontario (11/2007 – 08/2010)
- Involved in high school data collection (questionnaire and observation data).
 - Responsible for overseeing the creation of a coding scheme and the coding of observational high school data.
- Dr. Greg Moran, University of Western Ontario (09/2008 – 04/2009)
- Involved in collecting attachment data from mother-child dyads.
- Dr. Michael Pratt, Wilfrid Laurier University (10/2004-08/2007)
- Responsible for interviewing participants (24-27 years of age), transcribing life story interviews, coding and analyzing data in SPSS.
- Dr. Kim Roberts, Wilfrid Laurier University (09/2006 – 04/2007)
- Interviewed participants (5-8 years of age).
- Dr. Christian Jordan, Wilfrid Laurier University (10/2004 – 04/2005)
- Responsible for running participants on the Implicit Associations Test.

CAREER DEVELOPMENT

- 05/2009 UWO Summer Institute on Longitudinal Data Analysis

EVALUATION OF ARTICLES FOR SCIENTIFIC JOURNALS

- 10/2010 - present Reviewer
Journal: Child Development Research (1 manuscript)
- 04/2009 – 06/2011 Co-Reviewer (with Dr. Lynne Zarbatany)
Journal: British Journal of Developmental Psychology (1 manuscript)
Journal: Social Development (2 manuscripts)

SCHOLARLY AND PROFESSIONAL ACTIVITIES

- 2006-2007 **Student Representative**, Canadian Psychological Association
- 2003-2005 **Student Representative**, Undergraduate Curriculum Committee, Psychology Department, WLU
- 2003-2005 **Student Representative**, Science Divisional Council, WLU
- 2001 – 2005 **President** ('02-'05), Student Psychology Society, WLU