CULTURAL VARIATIONS IN MOTHERS' ATTRIBUTIONS:
INFLUENCE OF CHILD ATTENTION-DEFICIT/HYPERACTIVITY DISORDER

by

Janet W.T. Mah

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF ARTS

in

THE FACULTY OF GRADUATE STUDIES

(Psychology)

THE UNIVERSITY OF BRITISH COLUMBIA

August 2006

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Abstract

The attributions made by Chinese immigrant and Euro-Canadian mothers regarding the causes of child prosocial and problem behaviors exhibited by children with and without Attention-Deficit/Hyperactivity Disorder (ADHD) were investigated. The attributions of 51 mothers of 5- to 9-year-old boys were elicited using audio-taped scenarios of child behavior. In one-half of the scenarios, the child was described as having ADHD. Overall, mothers attributed less responsibility to the child for problem behaviors when the child was described as having an ADHD diagnosis than when the child was described as not having any behavior disorders. Furthermore, in comparison to Euro-Canadian mothers, Chinese immigrant mothers saw the child as less responsible for prosocial behavior. In general, mothers attributed the child's prosocial behaviors more than problem behaviors to parental factors, and also attributed the behavior of children who were described as not having any behavior disorders more to parental factors compared to the behavior of children labeled with ADHD. Findings from this study have implications for gaining a better understanding of the cultural uniqueness and similarities of maternal attitudes regarding ADHD.

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Acknowledgements

I offer my enduring gratitude to my supervisor, Dr. Charlotte Johnston, for her knowledge, wisdom, perseverance, and dedication. I could not have imagined having a better advisor and mentor. Particular thanks are owed to my committee members, Dr. Steven Heine and Dr. Scott Carlson, for thought-provoking discussions and practical suggestions. My appreciation goes to Vincci Yuen, Janette Kung, Joanna Chau, and Julie Kim for all their time and effort invested into this project. I acknowledge the generous financial support from the Michael Smith Foundation for Health Research, the B.C. Medical Services Foundation, and the Social Sciences and Humanities Research Council of Canada. Special thanks to close friends and colleagues from CPC, UBC, and SJC for their valuable support, encouragement, and amusement. Finally, I am forever indebted to my family for their unfaltering love and faith in me throughout the years. To them, I dedicate this thesis.

Introduction

In recent years, developmental and family researchers have increasingly focused their attention on parental attributions, or causal explanations, for child behavior (Bugental, Johnston, New, & Silvester, 1998). Their interest lies in the assumption that the manner in which parents explain their children's characteristics and behaviors has important implications for the parents' immediate emotional and behavioral responses to the child, as well as for long-term parent-child relationship quality (Dix, Ruble, Grusec, & Nixon, 1986). Furthermore, parents' attributions for child behavior may differ across cultures (Chiang, Barrett, & Nunez, 2000), and may be particularly significant for children diagnosed with a mental disorder, since parents' attributions for child behavior are predictive of the acceptability and implementation of interventions for child disorders (Johnston, Seipp, Hommersen, Hoza, & Fine, 2005). In fact, parental beliefs about the causes of child problems may be a partial mediator in the relationship between ethnicity and mental health service use (Yeh et al., 2005). However, to date, there are few published studies examining cross-cultural differences in parental attributions for child behavior related to Attention-Deficit/Hyperactivity Disorder (ADHD). It is particularly important to examine Chinese parents' attributions regarding ADHD because it is expected that Chinese parents will view ADHD symptoms of inattention, impulsivity and hyperactivity as particularly unacceptable and distressing given that the Chinese culture holds higher demands of inhibition (e.g., impulse control and suppression of aggression) and compliance (e.g., obedience without question) from children in comparison to the European or North American culture (Julian, McKenry, & McKelvey, 1994). These demands are particularly stressed after the child reaches "the age of understanding" around the age of 6, and most especially for sons rather than daughters (Chao & Tseng, 2002; London & Devore, 1988).

Although it would be ideal to assess cross-cultural differences in attributions made by mothers of children who have been diagnosed with ADHD, interesting insight can be gained from examining attributions made by mothers of nonproblem children as well. First, mothers of nonproblem children represent members of the general community whose perceptions of ADHD are likely to directly and indirectly affect the lives of children with ADHD and their families. For instance, a lack of accurate information about ADHD may shape community members' interpretations of and responses to the child's ADHD symptoms (Summers & Caplan, 1987), and negative or inaccurate public perceptions regarding the disorder may exacerbate the sense of isolation and lack of social support that many parents of children with ADHD report compared to parents of children without ADHD (Johnston, 1996). Second, because some mothers of children ages 5 to 9 years may face the possibility of their child being diagnosed with ADHD in the future, responses from these mothers may provide insight into the attributions for child behavior they may make upon diagnosis. Thus, this study takes a first step in bridging the gap in the literature by comparing attributions made by Chinese immigrant and Euro-Canadian mothers for the behavior of children with and without the diagnosis of ADHD.

Attention-Deficit/Hyperactivity Disorder

ADHD describes children who display persistent age-inappropriate symptoms of inattention and hyperactivity-impulsivity. The disorder occurs in approximately 3-7% of elementary-school aged children in North America (American Psychiatric Association, 2000), with similar prevalence rates of ADHD (2-9%) reported in China (Mann et al., 1992; Shun-zhen, Fang, & Hui-ping, 2004). ADHD is associated with both concurrent and long-term impairments in multiple areas of life, particularly within the home, academic and social domains (Barkley, 1998; Kupfer et al., 2000). Parents of children with ADHD are faced with increased caretaking

demands (Harrison & Sofronoff, 2002). In general, there are higher levels of negative (e.g., noninteractive, noncompliant) and controlling (e.g., aversive demands) behaviors in both parents and their children with ADHD compared to families with nonproblem children (Cunningham & Barkley, 1979; DuPaul, McGoey, Eckert, & VanBrakle, 2001). This is especially true of parents with children who have a comorbid diagnosis of ADHD and Oppositional-Defiant Disorder (ODD; Johnston & Mash, 2001). Thus, given that parents have a substantial impact on child outcomes (Collins, Maccoby, & Steinberg, 2000), an understanding of what influences parenting practices in both Chinese and Euro-Canadian cultures seems imperative in efforts to foster optimal child development in these cultures, particularly for children with ADHD.

Parental Attributions for Child Behavior

The actions and emotions of family members cannot be fully understood without recognition of the cognitive processes to which they are linked (Bugental & Johnston, 2000). Numerous theoretical approaches have addressed family-relevant cognitions, including attributional theories that are primarily concerned with differences in the perceived controllability, intentionality, locus, and stability of causes of family-related events (Bugental et al., 1998). Parental attributions are seen as interpretive filters through which meaning is assigned to the behaviors and characteristics of children and to the nature of the parent-child relationship. The meaning assigned to the children's actions is related to parental affect and choice of coping or discipline strategies (Power, Gershenhorn, & Stafford, 1990). That is, parents must infer the needs, motives, and limitations that underlie particular child behaviors, and once formulated, these causal inferences may guide parenting responses that have significance for socialization. For instance, research suggests that a parent will be more upset with child problem behavior if he or she infers it to be intentional, controllable, and internally caused (Dix et al., 1986).

Although there are many different attributions that can be made for child behavior, it has been suggested that responsibility is a product or summation of many of the other attributions, including internality, intent, and controllability (Provencher & Fincham, 2000). That is, an individual will be held personally responsible for their actions if it is determined that the individual was the main cause for the occurrence of the behavior, intended for the action to take place, and was not under the influence of uncontrollable, coercive factors that forced the individual to behave in such a manner. Furthermore, Shaver's (1985) theory of the attribution of blame suggests that a judgment of responsibility, which rests upon the determination of causality, is fundamental to the process of assigning blame, which in turn impacts subsequent behavioral and emotional responses that ultimately affect relationship quality and individual adjustment. In fact, empirical studies suggest stronger relationships between responsibility attributions and behavioral responses than between causal attributions (e.g., dimensions of locus, control, and stability) and behavior (Bradbury & Fincham, 1992; Miller & Bradbury, 1995). Thus, for the purposes of this study, responsibility attributions will be chosen as the primary variable of interest.

Cultural Differences in Parental Attributions

Research suggests that causal attributions made by parents differ across cultural groups and across types of child behavior. Euro-American mothers of children without behavior problems typically demonstrate a child-serving attributional bias in which internal, controllable, and stable factors (e.g., being a good kid, child competence) are credited for positive child behaviors (e.g., helping others, achieving goals), whereas external, uncontrollable, and transient factors (e.g., accidents) are given as causes for child problem behavior (Gretarsson & Gelfand, 1988). That is, Euro-American mothers view the child as more responsible for their positive

behaviors, but less responsible for their problem behaviors. In contrast, Chinese mothers appear to demonstrate a less child-serving attributional bias in which children are less likely to be credited as responsible for their positive behaviors - which are explained instead by external, uncontrollable, and transient factors (e.g., easy task). Conversely, Chinese mothers hold children relatively responsible for their problem behaviors, with internal, controllable, and stable factors (e.g., aggressive personality, child incompetence) given as reasons ascribed to negative child behaviors and failures (Chiang et al., 2000). However, although participants in the aforementioned studies were matched on certain demographic information (e.g., SES, education level), comparisons were made between people residing in different countries, so results may not generalize to the attributions for child behavior that immigrant Chinese mothers living in Canada may make.

Immigrant status, or the family's degree of acculturation, appears to play an important role in determining maternal attributions for child behavior. Cognitions related to childrearing and socialization are believed to acculturate very slowly, perhaps because mental schemas are generally resistant to change, or because they constitute core aspects of identity (Cote & Bornstein, 2003). Hess, Chih-Mei, and McDevitt (1987) examined attributional differences amongst mothers from the People's Republic of China (PRC), Chinese-American and Euro-American mothers. They found that mothers in the PRC held the child responsible for low child performance, viewing lack of child effort as the predominant cause. Chinese-Americans demonstrated a similar pattern, but held the child less personally responsible, as less weight was assigned to effort, and more weight was assigned to lack of natural ability, poor school training, and poor home training. Euro-Americans distributed blame more evenly across other causes of behavior, placing responsibility on multiple aspects, including child ability, child effort, training,

and luck. Thus, the attributions of Chinese immigrant mothers were intermediate to those of native Chinese and Euro-American mothers. Similar patterns were found by Bornstein and Cote (2004) who compared Japanese immigrant mothers' attributions with those of mothers residing in Japan and Euro-American mothers. Overall, results of these studies suggest that, in comparison to Euro-American mothers, Asian, particularly Chinese, mothers are more likely to blame and hold their children and themselves responsible for their children's misdeeds and less willing to give or take credit for their children's positive behaviors, and that acculturation impacts the types and strength of attributions made. However, these studies have been limited to focusing on mothers' attributions for child behavior in success/failure situations for nonproblem children, rather than on children with behavior problem disorders (e.g., ADHD). Thus, the current project will compare attributions made by Chinese immigrant (i.e., those with a Chinese heritage who have immigrated to Canada) and Euro-Canadian (i.e., those of Western European descent who were born in Canada) mothers regarding the causes of both prosocial and problem behaviors exhibited by children with and without ADHD.

Attributions for Behavior of Children with ADHD

There is general agreement within the mental health field regarding the value of understanding the nature of mental disorders and of clearly identifying these disorders in order to provide beneficial intervention and services (Vig, 2005). There are at least three major advantages of diagnosis: common base for communication across individuals, taxonomy that enables and promotes empirical research in psychopathology, and guide for clinical practice and treatment (Trull & Phares, 2001). However, considerable concern has been expressed regarding the potential negative impact of diagnostic labels (e.g., ADHD) on young children or on individuals' perceptions of these children (Vig, 2005), although few studies have examined the

effect of an ADHD diagnosis on attributions for child behavior. When an individual discovers that a child has been diagnosed with ADHD, that individual's judgment and response to the child will likely have roots in the meaning assigned to the diagnosis within their own knowledge base, and responses to the child will reflect the attributions that arise from this knowledge. Thus, it is important to explore the effect of an ADHD diagnosis on attributions for child behavior in order to understand how individuals may judge and respond to children diagnosed with ADHD.

Madle, Neisworth, and Kurtz (1980) evaluated the effect a diagnosis of ADHD had on affective responses by asking college students to view two videotapes of behavior of preschoolers after being led to believe that one child had ADHD whereas the other child did not. Despite the equivalence of the behaviors displayed in the videos, the presence of the ADHD diagnosis led to more negative ratings of behavior (i.e., perception of more deviance) in comparison to the ratings for the other preschooler who was described as "normal". Koonce, Cruce, Aldridge, Langford, Sporer, and Stinnett (2004) also found that teachers made significantly more negative judgments about children's social and attentional skills when the children were labeled with ADHD in comparison to the nonlabeled condition. Cornett-Ruiz and Hendricks (1993) tested the influence of both the ADHD diagnosis and stereotypical ADHD behavior on ratings by both teachers and peers, and also included both normal and deviant behavior in the video segments. They found that demonstrations of stereotypical ADHD behavior had a significant negative impact. When a child displayed symptoms of ADHD behavior, students and teachers had more negative first impressions of the child and made more negative predictions for that child's future academic success as compared to when a child did not display stereotypical ADHD behavior. However, the use of the ADHD diagnosis by itself had no effect on the ratings of the teachers and peers, with one exception: peers were less critical in

evaluating an essay written by the child with the ADHD label than the child with the normal label. In this case, the label may have created lower expectations of behavior, thus leading to less critical evaluation of the child's actual performance. This seems to be supported by Sonuga-Barke and Goldfoot (1995) who found that mothers of boys with ADHD had lower expectancies for their own children's development than mothers of nonproblem children, even though their expectations for the development of normal children did not differ.

More research is required to resolve, or to better account for, the inconsistency in findings related to evaluation of child behavior in response to an ADHD diagnosis. Furthermore, most of the aforementioned studies have used students and teachers as participants and have neglected the involvement of parents. In comparison to parents, teachers are likely have more information and expertise regarding ADHD, and students have more exposure to children with ADHD in school settings in comparison to parents (Harasymiw & Horne, 1976). Therefore, the responses of these groups may not generalize to the parents. There is a need to study the effect of diagnosing a child with ADHD on parents' attributions for the child's behavior because parents' responses to the diagnosis may be pivotal in understanding how they will respond to children with ADHD.

The effect of an ADHD diagnosis on parents' attributions for child behavior may be estimated from research that has compared attributions for child behavior made by parents of children with ADHD and those made by parents of nonproblem children. Research suggests that Euro-Canadian parents of children with ADHD tend to adopt a disease-model pattern of attributions for child behavior in which children are not held responsible for their problem behavior. Parents of children with ADHD see their child's problem behavior as caused by factors that are more internal and stable but less controllable by the child in comparison to parents of

nonproblem children (Johnston & Freeman, 1997). Moreover, such attributions are made regarding both inattentive-overactive and oppositional-defiant behaviors. In addition, these parents also hold a more pessimistic view of positive child behaviors, being less likely to credit children as responsible for their prosocial behaviors, seeing these as less dispositional and less durable, in comparison to parents of nonproblem children. Finally, parents of children with ADHD also take less personal responsibility for their children's behavior than do parents of nonproblem children. Collett and Gimpel (2004) found similar differences in attributions between mothers of children with ADHD and mothers of children without ADHD when using a slightly older sample of children than that studied by Johnston and Freeman (1997). Taken together, findings suggest that among Euro-American parents, the experience of parenting a child with ADHD is related to a diminished degree in which parents see either themselves or their children as responsible for, or able to impact, the child's difficult behavior. However, a different story unfolds when attributions for mental illness in children are made by Chinese parents.

Cultural Differences in Attributions for Mental Illness

Many minority groups, including Chinese individuals, in comparison to Euro-American populations, tend to view problematic behaviors from a broader perspective that encompasses spiritual, moral, somatic, psychological, and metaphysical causes (Flaskerud, 1984). Ryan and Smith (1989) examined Chinese-American parents' reactions to their children's developmental disabilities such as mental retardation, neurological impairment, learning disability, and autism. Most of the children were between the ages of 5 and 9 years. They found that like Euro-American parents, Chinese-American parents reacted to the disability with sadness, anger, fear, and frustration. However, Chinese-American parents demonstrated more guilt that was associated with an increased tendency to attribute more child responsibility and parental self-

blame for the child's condition, and showed a lack of knowledge and understanding of the diagnosis, in comparison to Euro-American parents. On the other hand, these parents had a three-fold causal conception of disease, attributing problems to physical agents, supernatural agents (e.g., fate), and metaphysical causes (e.g., cosmology, yin and yang), as well as perceiving disability as a temporary problem. This is also in line with Yeh, Hough, McCabe, Lau, and Garland (2004) who found that Asian/Pacific Islander-American parents were more likely to attribute the causes of their youth's mental health problems (e.g., alcohol/drug, serious emotional disturbance) to external factors such as the influence of popular American culture and to racial discrimination or prejudice, whereas non-Hispanic white American parents were more likely to place the blame on physical health problems or disabling conditions with which the child was born, the child's character or personality, conflict within the family, and trauma suffered by the child. In sum, results across studies offer a conflicting picture of the attributions for child behavior related to mental illness made by Chinese parents. That is, although results suggest that Chinese parents may attribute the problem behavior of a child with a disability to external and uncontrollable causes, they nonetheless seem to hold the child and themselves more responsible for the child's behavior in comparison to Euro-American parents.

Despite the discrepancy in specific causes of child behavior found across studies, the tendency to make responsibility attributions for child behavior related to mental illness among Chinese parents is congruent with the previously mentioned findings of attributions of Chinese parents for the behavior of nonproblem children in comparison to Euro-American parents. Overall, results suggest that Euro-American parents hold the child less responsible for child behavior when the child has a disability such as ADHD in comparison to when the child does not have a disability. Furthermore, results suggest that, in contrast, Asian-American mothers may

hold themselves and the child more personally responsible for child problem behavior and failures in comparison to Euro-American mothers. Thus, although research has not yet been extended to examine Asian-Canadian mothers' attributions regarding children's problem behaviors associated with ADHD, it is expected that Chinese immigrant mothers will be likely to attribute more responsibility to themselves and to children with ADHD for problem child behaviors in comparison to Euro-Canadian mothers.

Current Study

This project investigates attributions made by Chinese immigrant and Euro-Canadian mothers regarding the causes of child behaviors and the effect of the child being diagnosed with ADHD. In particular, the effects of cultural group, diagnosis, and child behavior type, as well as the interactions among these variables on mothers' attributions of child responsibility for behavior will be examined. It is particularly important to focus on mothers and their sons as the prevalence of ADHD has been found to be considerably higher in boys than girls, with male-to-female ratios ranging from 2:1 to 9:1 (American Psychiatric Association, 2000), and because mothers play a primary role in the socialization of their children (Collins et al., 2000). The effect of diagnosing a child with ADHD on mothers' attributions for child behavior is particularly applicable among families of elementary school-aged children, as it is approximately at the age of 7 when a child's ADHD symptoms first become noticeably problematic (American Psychiatric Association, 2000), and when children may first be given the diagnosis of ADHD.

Given the lack of studies comparing attributions for ADHD and nonproblem children among Chinese parents, I will assume that the relative pattern of attributions for the behavior of children with and without ADHD made by Chinese mothers will be similar to that of Euro-Canadian mothers of children with ADHD. Thus, for all mothers, I predict a main effect of

diagnosis in which mothers will attribute less responsibility to the child when the child has been described as having an ADHD diagnosis than when the child is described as not having any behavior problems. Furthermore, based on findings that suggest that, in comparison to Euro-Canadian mothers, Chinese mothers are more likely to blame and hold their children and themselves responsible for their children's problem behavior and are less willing to give or take credit for their children's positive behaviors, I hypothesize a two-way interaction between cultural group and child behavior type in which, in comparison to Euro-Canadian mothers, Chinese immigrant mothers will hold the child more responsible for problem behavior, and see the child as less responsible for prosocial behavior. It is assumed that this same relative pattern of attributions will be made by both cultural groups for the behavior of children with and without ADHD.

Method

Participants

Sixty-two mothers of boys between the ages of 5 to 9 years participated, and data from 11 mothers were excluded because they did not meet cultural inclusion criteria. There were two groups of participants, differentiated by culture, but all residing in Canada. The group of Euro-Canadian mothers was comprised of 23 mothers of Western European descent with at least a second generational Canadian status (i.e., born in Canada). The group of Chinese immigrant mothers was composed of 28 mothers who were born in the country of their heritage descent, and had immigrated to Canada after the age of 18 years. In order to ensure homogeneity in the acculturation status of the Chinese immigrant group, only mothers who identified themselves more with their heritage culture than the mainstream culture were included. Of the Chinese mothers, 17 were born in mainland China, 10 were born in Hong Kong, and 1 was born in

Taiwan. As expected, Chinese mothers spent significantly less time living in Canada than Euro-Canadian mothers, $t(49) = 18.67, p < .001$. Mothers were recruited by posting notices in community centers, parenting group newsletters, and displaying a booth at a local shopping mall.

The majority of mothers were married (82%), with a mean age of 39.12 years ($SD = 5.96$). The average age of the mothers' sons was 7.23 years ($SD = 1.46$), families had an average of two children ($SD = 0.99$) and family socioeconomic status (SES) was predominantly middle-class based on the Hollingshead (1975) Four-Factor Index of Social Status ($M = 36.28, SD = 12.46$). Comparisons between groups yielded no significant differences on these demographic variables, with the exceptions of the number of children in the family, $t(49) = 2.39, p < .05$, and SES, $t(49) = 3.50, p < .01$. Euro-Canadian mothers had more children and a higher SES score than the Chinese immigrant mothers.

None of the mothers reported having any children who had been diagnosed with any major physical, mental, or behavioral condition or disorder. However, there were some significant differences in the perceived level of child psychological adjustment as measured by the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997) across cultural groups. In particular, Euro-Canadian mothers reported higher levels of child hyperactivity/inattention than Chinese mothers, $t(49) = 2.43, p < .05$. Note that, due to low internal consistencies (presented in the Results section), some of the SDQ subscales were not used in this sample. Descriptive information for the groups is presented in Table 1.

Table 1

Descriptive Information for Euro-Canadian and Chinese Immigrant Mothers

Variable	Euro-Canadian (<i>n</i> = 23)		Chinese immigrant (<i>n</i> = 28)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Mother age (in years)	38.78	6.14	39.39	5.91
Target child age (in years)	7.00	1.54	7.41	1.40
Number of children in the family*	2.39	1.03	1.75	0.89
Socioeconomic status**	42.37	10.04	31.29	12.16
Years lived in Canada***	38.26	5.80	7.34	5.95
Heritage culture identification ^a	---	---	6.90	0.95
Mainstream culture identification ^a	---	---	5.65	0.86
Child emotional symptoms ^b	1.70	1.36	2.00	2.19
Child hyperactivity/inattention ^{b*}	5.00	2.71	3.18	2.63
Child prosocial behavior ^b	7.35	2.62	7.75	1.62
Child total difficulties ^b	11.00	4.99	8.04	5.74

Note. ^a Scores from the Vancouver Index of Acculturation (VIA; Ryder, Alden, & Paulhus, 2000). ^b Scores from the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997).

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

Measures

All measures and audio-taped scenarios were first devised in English, and then subsequently translated into both Cantonese and Mandarin. Translation guidelines suggested by van Widenfelt and colleagues (2005) were followed. A team of four native Cantonese speakers who were trilingual and bicultural were involved. Dictionaries, translation programs, and consultation with family, friends, and colleagues were used to aid translation of difficult items. To establish the validity of the translations, a translator who was naive to the experimental hypotheses and to the original English wording translated the Chinese versions back into English. Any discrepancies between the original and back-translated English versions were retranslated by another translator who was also naive to the hypotheses and previous translations. Translations agreed upon by at least two translators were considered accurate. Furthermore, a final review of all translations was conducted between a Chinese immigrant mother and a clinical psychology graduate student to ensure both cultural and clinical appropriateness of the measures. Mothers were given the option of which language version of the measures they preferred to receive.

Demographic/Background Questionnaire. Mothers were asked to report on their age, ethnicity, number of years lived in Canada, marital status, socioeconomic status (SES), and on the number, ages, and genders of her children. Refer to Appendix A for a copy of this measure.

Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997). To control for potential differences across groups in perceived child psychological adjustment, mothers completed the SDQ - a brief behavioral screening questionnaire that asks parents of children ages 4 to 10 years about 25 attributes of their child's behavior (see Appendix B for items). Mothers were asked to answer questions referring to one of her sons. If the mother had more than one son between the

ages of 5 and 9 years, the one who was closest to the age of 7 years was chosen as the target child. Items are rated on a three-point Likert scale (not true, somewhat true, and certainly true). The 25 items are divided among five scales of five items each, generating scores for conduct problems, hyperactivity, emotional symptoms, peer problems, and prosocial behavior; all but the last are summed to generate a total difficulties score. This scale has demonstrated acceptable psychometric properties (Goodman, 2001). Reliability of this scale is generally satisfactory, whether judged by internal consistency (mean Cronbach $\alpha = 0.73$), cross-informant correlation (mean = 0.34), or retest stability after 4 to 6 months (mean = 0.62). SDQ scores above the 90th percentile predict a substantially raised probability of independently diagnosed psychiatric disorders (mean odds ratio = 15.7; Goodman, 2001). Internal consistency estimates for this sample are presented in the Results section.

Vancouver Index of Acculturation (VIA; Ryder, Alden, & Paulhus, 2000). The VIA was used to ensure a homogeneous group of Chinese immigrant mothers who displayed similar levels of acculturation. It is a 20-item self-report instrument designed to assess several domains relevant to acculturation, including values, social relationships, and adherence to traditions. Items were generated in pairs with regard to content area, with one item in each pair referring to the heritage Chinese culture and the other item referring to mainstream North American culture. Each item is rated on a 9-point scale ranging from 1 (*strongly disagree*) to 9 (*strongly agree*). Two subscale scores are computed, with one score signifying level of identification with the heritage culture and another score signifying level of identification with the mainstream culture. Satisfactory psychometric properties have been demonstrated for this measure (Ryder et al., 2000). Both the heritage and mainstream dimensions are highly internally consistent (α s = .91, and .89, respectively). Both subscales also yield significant correlations with several concurrent

validity indicators, including percentage of time lived in Canada, generational status, and Western identification (mean $r_s = -.37$ for the heritage subscale, and $.47$ for the mainstream subscale; Ryder et al., 2000). Refer to Appendix C for a sample of this questionnaire. Internal consistency estimates for this sample are presented in the Results section.

Audio-taped Scenarios of Child Behavior. Although many parental attribution measures make use of hypothetical events presented as brief written vignettes (Bugental & Johnston, 2000), scenarios describing child behavior in this study were presented via audiotape. As an attempt to access mothers' first impressions and prevent them from over-analyzing the situation, mothers were only able to listen to each scenario once rather than being able to read and re-read the scenarios at their own pace. Moreover, this presentation manner may be more characteristic of "live" situations because mothers often must react immediately to children's behavior rather than having the time to fully process the information.

Sixteen short audio-taped scenarios were used to describe behaviors characteristic of 5- to 9-year-old boys. A pilot study was conducted to ensure that mothers viewed the behaviors as characteristic of boys of this age range and as applicable to both the Chinese and Euro-Canadian cultures. There were eight scenarios describing problem behaviors, and another eight scenarios describing prosocial behaviors. The descriptions of problem behaviors were adapted from the DSM-IV criteria for ADHD (American Psychiatric Association, 2000). Each scenario described a single behavior that is characteristic of hyperactive-impulsive or inattentive symptoms of ADHD. For example, children in these scenarios were described as interrupting others, having difficulty waiting their turn, or being easily distracted. Prosocial behavior scenarios were rationally developed to match the problem behavior scenarios in length and detail. For instance, boys in these scenarios were described as being considerate, willing to help without being asked,

well-behaved, or well-mannered. All scenarios were narrated and recorded onto audio-taped CDs by one of two female research assistants. Appendix D includes a list of the scenario scripts.

Prior to playing the audio-taped scenarios for mothers, a standard, brief description of the symptoms, but not the causes, of ADHD was offered to ensure that all mothers would have similar information regarding ADHD (refer to Appendix F for this description). Mothers were requested to imagine themselves as the mother of the children described in the audiotapes. Half of the scenarios (four prosocial and four problem behaviors) were both verbally and visually (i.e., using a sign) identified as describing children diagnosed with ADHD, and the other eight scenarios were identified as describing nonproblem children. That is, in order to help the mothers keep track of whether the child being described in each scenario had ADHD or not, before playing the audiotape, the research assistant stated aloud and placed a sign on the table to identify whether the child in the next scenario had ADHD or not. Diagnostic conditions were counterbalanced across scenarios, and were presented in random order across mothers.

Dimensional Attributions Questionnaires (DAQ). Immediately after listening to each scenario, mothers made ratings on five 10-point Likert-type scales that assessed multiple dimensions of causal attributions (e.g., responsibility, blame) for child behavior. This measure was adapted from Johnston and Freeman's (1997) Written Analogue Questionnaire (WAQ) and Provencher and Fincham's (2000) Attribution Scale for Symptom Behaviors (ASSB), both of which have demonstrated adequate reliability estimates (α s for ratings across four scenarios ranging from .49 to .83; Freeman & Johnston, 2005; and test-retest reliability ranging from .60 to .73; Provencher & Fincham, 2000). The WAQ also has demonstrated sufficient validity: correlating significantly with attributions offered in recalled incident interviews and video-mediated recall formats (mean r s = .24 and .23, respectively), correlating significantly with

affective and behavioral responses to child behavior (mean r s = .33 and .40, respectively), and being sensitive to group status differences (e.g., clinical vs. nonclinical samples, and medicated vs. unmedicated samples) and behavior type differences (e.g., inattentive-overactive, oppositional-defiant, and prosocial child behaviors; Johnston & Freeman, 1997). The ASSB also was found to be sensitive to differences in behavior types (e.g., positive and negative symptom behaviors; Provencher & Fincham, 2000).

The front page of the DAQ contained an explanation of the causal attribution dimensions and an example of their use. Mothers went through this front page together with the research assistant prior to listening to the audio-taped scenarios. The major scale of interest in the study, focusing on responsibility attributions, was rated on a 10-point scale ranging from 1 (*not at all responsible*) to 10 (*completely responsible*). Four other 10-point scales assessed other causal attributions related to Shaver's (1985) theory of attributions of blame: controllability (1: *not at all controllable* to 10: *completely controllable*), intentionality (1: *not at all intentional* to 10: *completely intentional*), and blame or credit ascribed to both the child and the parents (1: *not at all to be blamed/deserves credit* to 10: *completely to be blamed/deserves credit*) for problem or prosocial child behaviors, respectively. The final scale in both versions asked for the mother's affective response to the child's behavior, which was rated on a 10-point scale ranging from 1 (*extremely upset*) to 10 (*extremely pleased*). As there were four scenarios for each of the four conditions (i.e., ADHD diagnosis with problem behavior, ADHD diagnosis with prosocial behavior, no diagnosis with problem behavior, no diagnosis with prosocial behavior), an average score for each of the five attribution scales and the one affective response scale on the DAQ was computed across these four scenarios. Refer to Appendix E for a copy of this scale.

Procedure

When mothers first contacted the laboratory, a research assistant described the study in detail, in the preferred language of the mother (i.e., English, Mandarin, or Cantonese), and if mothers were interested in participating, a brief phone screening was conducted to determine whether they met criteria to be included in the study. Eligible mothers had the option of participating at the Parenting Lab in the Department of Psychology at University of British Columbia (UBC), or in their own home. Seventy-four and a half percent of mothers participated at UBC, whereas 25.5% participated in their homes. There were no significant differences in the location of visit across cultural groups, $t(49) = -.55, p > .05$. Upon arrival, mothers were provided with a consent form that clearly outlined the procedures of the study. Once consent was given, mothers were asked to complete the questionnaires on demographic information and child adjustment. Next, mothers listened to the 16 short audio-taped scenarios describing child behavior. Immediately after each scenario, mothers answered the six questions listed on the DAQ. Next, mothers were asked how easy or hard it was to imagine being a mother of the children described in the scenarios. This question, which was rated on a 10-point scale ranging from 1 (*easiest*) to 10 (*hardest*), provided an estimate of whether the mothers' responses in the study may approximate actual responses in real life. The mean rating across all mothers in this sample was 3.45 ($SD = 2.16$). However, Chinese mothers ($M = 4.11, SD = 2.28$) gave significantly higher ratings than Euro-Canadian mothers ($M = 2.65, SD = 1.72$), $t(49) = -2.52, p < .05$. Finally, mothers of the Chinese immigrant group were asked to complete the acculturation questionnaire. Refer to Appendix F for the procedural script. This study was first piloted with five mothers from each group. These mothers were asked to provide feedback about potential

changes that can be made to improve the study. Because there were no stated problems or suggestions for improvement, data from these mothers were included in the final sample.

Results

The data were analyzed in six steps. First, preliminary analyses were conducted to examine the distributions of all scores and the internal consistencies of all administered questionnaires. Second, correlations among attributions were conducted to determine if the dimensions could be collapsed. Third, the associations between demographic variables, culture, and the attributional ratings were examined to determine whether or which demographic variables should be controlled. Fourth, attributions for child behavior were analyzed using a mixed analysis of variance (ANOVA) with cultural group (Euro-Canadian, Chinese immigrant) as a between-subject factor, and diagnosis (no diagnosis, ADHD diagnosis) and type of child behavior (prosocial, problem) as within-subject factors. Fifth, correlations between causal attributions and affective responses were conducted to provide an estimate of how mothers' attributions relate to their affective responses. An alpha level of .05 was used for all statistical tests.

Preliminary Analyses

The majority of all scores appeared normally distributed, with skewness and kurtosis levels less than 1.00. None of the participants were missing data for a complete questionnaire; thus, scores were adequately computed using the means of the acquired data. Internal consistencies within all measures administered in the current sample were generally satisfactory. Mean Cronbach alphas for the SDQ were .69 for the emotional symptoms subscale, .52 for the conduct problems subscale, .86 for the hyperactivity/inattention subscale, .44 for the peer relationship problems subscale, .76 for the prosocial behavior subscale, and .67 for the total

difficulties subscale. Given the low values, only the emotional symptoms, hyperactivity/inattention, prosocial behavior, and total scales were considered. Mean Cronbach alphas for the VIA were .89 for the heritage subscale, and .85 for the mainstream subscale.

Data Reduction

Although responsibility attributions were the primary variable of interest, significant correlations between responsibility, control, intent, and blame attributions (see Table 2) suggested that these dimensions could be averaged into one single variable, termed responsibility. This approach is consistent with previous literature suggesting that responsibility is a product or summation of other causal attributions, including intent and control (Provencher & Fincham, 2000). Because parental blame/credit attributions were not significantly correlated to the majority of other causal attributions, these attributions remained as a separate dimension for analysis. Table 2 presents the correlations among causal attributional dimensions. Cronbach alphas for the ratings on the DAQ across eight scenarios ranged from .85 to .93 across the two attributional dimensions and one emotional reaction question.

Table 2

Correlations among Causal Attributional Dimensions

	Control	Intent	Child Blame/Credit	Parental Blame/Credit
Responsibility	.76**	.56**	.55**	.04
Control	---	.44*	.43*	.12
Intent	---	---	.58**	.21
Child Blame/Credit	---	---	---	.37*

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

Examination of Possible Covariates

Demographic variables and child adjustment scores were considered as possible covariates for analyses. Number of children in the family, SES, child hyperactivity, and mothers' ratings of the difficulty imagining DAQ scenarios were investigated as potential covariates since there were significant differences between cultural groups on these scores. To be used as a covariate, a variable had to correlate significantly with the dependent variable, and the effect of the covariate itself had to be significant in the mixed analysis of variance (see Tabachnick & Fidell, 1996). As number of children in the family, child hyperactivity, and imagination difficulty scores did not significantly correlate with responsibility attributions, nor were the effects of these covariates significant in the ANOVAs, these variables are not discussed further. On the other hand, SES was significantly correlated with responsibility attributions for prosocial child behavior, $r(49) = .42, p < .01$, and was considered as a covariate in the ANOVA as described below.

Responsibility Attributions

A three-way mixed ANOVA was conducted to examine differences in responsibility attributions for child behavior between cultural groups, diagnosis (ADHD vs. nonproblem), and type of child behavior (problem vs. prosocial). The main effects of cultural group, $F(1, 49) = 5.26, p < .05, \eta^2 = .10$, diagnosis, $F(1, 49) = 13.70, p < .01, \eta^2 = .22$, and child behavior type, $F(1, 49) = 171.61, p < .001, \eta^2 = .78$, were significant. These main effects were qualified by significant two-way interactions between child behavior type and diagnosis, $F(1, 49) = 4.51, p < .05, \eta^2 = .08$, as well as between child behavior type and cultural group, $F(1, 49) = 7.56, p < .01, \eta^2 = .13$. The two-way interaction between cultural group and diagnosis, as well as

the three-way interaction between cultural group, diagnosis, and type of child behavior were not significant. Table 3 presents the means and standard deviations of mothers' attributional ratings.

Table 3

Attributional Ratings for Problem and Prosocial Behaviors of Children Diagnosed with or without ADHD in Euro-Canadian and Chinese immigrant mothers

	Euro-Canadian mothers		Chinese immigrant mothers	
	ADHD	Nonproblem	ADHD	Nonproblem
Child Behavior Type	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Child Responsibility				
Problem behavior	5.78 (0.92)	6.54 (1.00)	5.73 (1.50)	6.54 (1.320)
Prosocial behavior	8.98 (0.94)	9.10 (0.89)	7.83 (1.51)	8.20 (1.40)
Parental Blame/Credit				
Problem behavior	4.80 (2.00)	4.98 (2.02)	4.40 (1.97)	4.66 (2.16)
Prosocial behavior	6.49 (1.95)	6.90 (1.91)	6.26 (2.57)	6.64 (2.43)

Follow-up tests of the interaction between child behavior type and diagnosis were conducted looking at the effect of the ADHD diagnosis for problem and prosocial behaviors separately. For problem child behaviors, the simple main effect was significant, $F(1,49) = 13.76, p < .01, \eta^2 = .22$, with mothers attributing less responsibility to the child for problem behaviors when the child was described as having an ADHD diagnosis ($M = 5.76, SD = .18$) than when the child was described as not having any behavior disorders ($M = 6.54, SD = .17$). For prosocial behaviors, no significant difference in responsibility attributions was found across the ADHD and no diagnosis scenarios. Figure 1 presents the interaction between diagnosis and child behavior type on responsibility attributions.

Figure 1. Interaction between diagnosis and child behavior type on responsibility attributions.

Follow-up tests of the interaction between child behavior type and cultural group were conducted separately for problem and prosocial behaviors. For prosocial child behaviors, there was a significant simple main effect, $F(1, 49) = 10.96, p < .01, \eta^2 = .18$. In comparison to Euro-Canadian mothers ($M = 9.04, SD = .23$), Chinese immigrant mothers ($M = 8.01, SD = .21$) saw the child as significantly less responsible for prosocial behaviors. However, no significant cross-cultural difference in responsibility attributions was found for problem child behaviors. Figure 2 presents the interaction between culture and child behavior type on responsibility attributions.

Figure 2. Interaction between culture and child behavior type on responsibility attributions.

SES as a Covariate

When SES was included as a covariate in the three-way mixed ANOVA to examine differences in responsibility attributions between cultural groups, diagnosis, and child behavior type, there was a significant main effect of SES, $F(1, 48) = 6.05, p < .05, \eta^2 = .11$, indicating that SES could be used as a covariate in the analysis¹. However, the two-way interaction between child behavior type and cultural group remained significant, $F(1, 48) = 5.12, p < .05, \eta^2 = .10$, although the significant two-way interaction between child behavior type and diagnosis was no longer significant. Given that the interaction between child behavior type and cultural group remained the same when SES was and was not included as a covariate, this suggests that variations in attributions that emerged reflect adherence to different cultural belief systems rather than SES:

Parental Blame/Credit Attributions

A separate three-way mixed ANOVA was conducted to examine differences in parental blame/credit attributions for child behavior between cultural groups, diagnosis, and type of child behavior. Significant main effects of child behavior type, $F(1, 49) = 36.31, p < .001, \eta^2 = .43$, and diagnosis, $F(1, 49) = 6.03, p < .05, \eta^2 = .11$ were found. Overall, mothers attributed more credit to parental factors for prosocial child behaviors ($M = 6.57, SD = .30$) than they attributed parental blame for problem child behaviors ($M = 4.71, SD = .28$). In addition, mothers attributed more parental blame/credit for the behavior of children who were described as having no behavioral problems ($M = 5.80, SD = .25$) than for the behavior of children who were described as diagnosed with ADHD ($M = 5.49, SD = .26$). No significant main effect of culture was found,

¹ SES was significantly correlated with responsibility attributions for prosocial child behavior, $r(49) = .42, p < .01$, but not for problem child behavior, $r(49) = .22, p > .05$.

nor were any of the interactions significant. Refer to Table 3 for means and standard deviations of mothers' attributional ratings.

Relations between Responsibility Attributions and Affective Responses

Correlations between responsibility attributions and affective responses were conducted to provide an estimate of how mothers' attributions relate to their responses to the child behavior. Responsibility attributions made by all mothers in this sample, collapsed across scenarios depicting both ADHD and nonproblem children, were significantly correlated with affective responses, $r(49) = -.33, p < .05$, for problem child behaviors, and $r(49) = .54, p < .001$, for prosocial child behaviors. The same pattern of correlations was displayed by both Euro-Canadian mothers and Chinese immigrant mothers.

Discussion

As predicted, all mothers attributed less responsibility to the child when the child was described as having an ADHD diagnosis than when the child was described as not having any behavior disorders. However, this difference was only found in relation to problem child behaviors, but not for prosocial child behaviors. Thus, previous findings indicating that mothers were more willing to excuse the problem behaviors displayed by children with ADHD than the problem behaviors displayed by nonproblem children were replicated (Collett & Gimpel 2004; Johnston & Freeman, 1997). On the other hand, contrary to hypotheses and previous literature, results from this study found that mothers were equally likely to give credit to both groups of children for prosocial behaviors. Furthermore, in support of the hypotheses related to cultural differences, in comparison to Euro-Canadian mothers, Chinese immigrant mothers attributed less responsibility to the child for prosocial behavior, which is in accord with previous findings on cultural differences in child-serving attributional bias for positive behaviors (Chiang et al., 2000;

Gretarsson & Gelfand, 1988). However, the prediction that Chinese immigrant mothers would hold the child more responsible for problem behavior compared to Euro-Canadian mothers was not supported. Thus, there did not appear to be cultural differences in child-serving attributional bias for negative child behaviors in this sample. Finally, as predicted, findings indicated no interaction effect between diagnosis and culture on the pattern of attributions made for prosocial and problem child behaviors. To our knowledge, this study is the first to investigate possible cultural differences in attributions offered for ADHD and nonproblem children. The lack of a significant interaction suggests that both cultural groups are interpreting the influence of ADHD in a similar fashion.

Impact of ADHD Diagnosis

The mothers of children in this study appeared to hold a relatively nonblaming attitude toward problem behaviors when displayed by children diagnosed with ADHD. Furthermore, they didn't appear to discount the prosocial behaviors of children with ADHD. Although the failure to detect this effect could be an issue of limited power (the effect had a probability level of $p = .14$), the effect size was small ($\eta^2 = .04$). Taken together, these findings suggest that the impact of labeling on parent's attributions may not be as negative as previously suggested (Koonce et al., 2004; Madle et al., 1980). Rather, results appear to be more consistent with the idea that the diagnosis of ADHD may create lower expectations of behavior, thus leading to less critical evaluation (Cornett-Ruiz & Hendricks, 1993; Sonuga-Barke & Goldfoot, 1995). In fact, there may be a positive impact of labeling, in which not only do mothers appear to be less critical of the problem behaviors of a child with ADHD, they are not pessimistic about the prosocial behaviors of the child. Given that some of the mothers in this sample could face the possibility of their child being diagnosed with ADHD in the future, these findings may have positive

implications for families whose child is first given a diagnosis of ADHD, since the mother's decrease in criticalness of the problem child behaviors of the child, without an increase in pessimism of the child's prosocial behaviors would likely have positive influences on her emotional and behavioral responses to the child, as well as on mother-child relationship quality. The findings of this study are somewhat in contrast to previous research examining the attributions made by parents of children diagnosed with ADHD that found that these parents held a more pessimistic view of positive child behaviors compared to parents of nonproblem children (Collett & Gimpel, 2004; Johnston & Freeman, 1997). This suggests that parents of children with ADHD may develop increasing pessimism and/or frustration over the years, or may have a more realistic attributional outlook regarding the causes of their child's behavior compared to parents of nonproblem children. It would be helpful for future research to investigate the process through which parents' attributions change as the child is diagnosed with ADHD. How and when does this change come about? Are there any protective or risk factors associated with this change?

This study uniquely contributes to understanding of the impact of an ADHD diagnosis on attributions across cultural groups. The impact of the ADHD label on the attributions of Chinese immigrant mothers was similar to the impact for Euro-Canadian mothers. One possible reason for why the attributions of both Chinese immigrant and Euro-Canadian mothers regarding ADHD were similar could be that the Chinese immigrant mothers were acculturated to the mainstream Canadian culture, perhaps having gained a similar understanding and knowledge of ADHD as Euro-Canadian mothers. Future research looking more closely at the process of acculturation among Chinese-Canadian families or studying families who are even more recent immigrants than the mothers in this study may provide insight into whether and how the impact of an ADHD label on maternal may change with acculturation. In sum, assuming that the lack of

difference in attributions for ADHD across Euro-Canadian and Chinese immigrant mothers found in this study is true, it has positive implications for Chinese-Canadian families with children diagnosed with ADHD. That is, the other members of the Chinese-Canadian community (e.g., the mothers of nonproblem children who participated in this study) are likely to hold a nonblaming and nonpessimistic attitude toward the behavior of children with ADHD, and such perceptions regarding ADHD would likely minimize any negative impact from the community on the lives of children with ADHD and their families (Johnston, 1996; Summers & Caplan, 1987), (e.g., providing a sense of acceptance and understanding to families of children with ADHD).

Cultural Differences in Child-Serving Attributional Bias

Although the Euro-Canadian mothers in this study demonstrated a child-serving attributional bias as is typically found in previous literature (Gretarsson & Gelfand, 1988), Chinese immigrant mothers demonstrated less of this child-serving attributional bias for prosocial child behaviors, but were not different in attributions for problem child behaviors. It is possible that the responses of mothers from both cultures were influenced by social desirability (Crowne & Marlowe, 1960; Paulhus, 1991), or that social desirability functioned different across the two groups, as this response style bias can be viewed as caused by the individual's desire to conform to the values of the society to which they belong (Fisher, 1993). If such a cultural difference in social desirability exists, it might account for the failure of Chinese immigrant mothers to assign even greater blame children for negative behaviors in this study. However, previous literature suggests that there is no difference in socially desirable responding between Asian-Canadian and Euro-Canadian individuals (Heine & Lehman, 1995).

Alternately, it is possible that attributions for positive child behaviors are more culturally engrained than those for negative child behaviors, and therefore, the Chinese immigrant mothers, through acculturation, have acquired similar attributions for problem child behaviors as Euro-Canadian mothers, but their attributions for prosocial child behavior remained more closely associated with the heritage Chinese culture than the mainstream North American culture. It is difficult to compare the current results to previous studies demonstrating that Chinese mothers have a less child-serving attributional bias than Euro-American mothers, as many previous studies have been limited to focusing on success/failure situations for nonproblem children (Chiang et al., 2000), rather than on prosocial/problem behaviors displayed by children with and without ADHD, as was done in this study. Perhaps Chinese immigrant mothers view the problem behaviors used in this study (i.e., the ADHD symptoms of inattention, impulsivity and hyperactivity) differently than a child's failure in academic-type situations. This could suggest that higher demands for inhibition and compliance among Chinese immigrant mothers, as suggested by Julian and colleagues (1994), may apply primarily in reference to academic situations rather than more general child behaviors. Thus, Chinese immigrant mothers may not have been unduly distressed by the problem behaviors associated with the ADHD symptoms used in this study.

Attributions to Parental Factors

Although the majority of previous literature centered on, and the main focus of this project was on, maternal attributions to child factors, preliminary examinations of attributions for child behavior to parental factors displayed some interesting findings. Overall, consistent with findings from Johnston and Freeman (1997), mothers attributed more parental blame/credit for the behavior of children who were described as having no behavioral problems than for the

behavior of children who were described as diagnosed with ADHD. This appears consistent with the idea that parents make attributions for symptoms of ADHD that are generally consistent with the chronic disease models (Barkley, 1998) in which parents see themselves and their children as less responsible for the child's problem behavior. Chinese immigrant mothers also appear to demonstrate this disease-model of attributions for child behavior related to ADHD.

In addition, this study uniquely contributes to the understanding of attributions of parental factors for child behavior. Mothers attributed more credit to parental factors for prosocial child behaviors than did they attribute parental blame for problem child behaviors. This suggests that not only is it possible to have a child-serving attributional bias, mothers may also demonstrate a parent-serving attributional bias. In fact, this bias appears to be similar between Euro-Canadian and Chinese immigrant mothers. Although this is contrary to previous findings indicating that Japanese and Japanese immigrant mothers take more personal responsibility than Euro-American mothers for failures and unsuccessful parenting situations (Chandler, Shama, Wolf, & Planchard, 1981), and less responsibility for successful situations (Bornstein & Cote, 2004), it is consistent with findings demonstrating that Japanese individuals display a markedly attenuated self-serving attributional bias, whereas Chinese individuals display a self-serving attributional bias that is comparable to American individuals (Mezulis, Abramson, & Hyde, 2004). Thus, although much of previous cross-cultural research has grouped individuals from diverse cultural backgrounds into broad categories (e.g., Asian Pacific Islander), these results suggest that it is important to distinguish among specific cultures as they are likely uniquely different from each other in patterns of attributions for both self and child.

Future directions

Maternal attributions have important implications for the mothers' emotional and behavioral responses to the child. In confirmation of this, responsibility attributions were significantly correlated with affective responses of mothers in this sample. That is, the more responsible a mother viewed the child, the more she was upset (for problem behaviors) or pleased (for prosocial behaviors). It would be helpful for future research to extend the relations between attributions and emotional responses to behavioral reactions and the impact on more general aspects of mother-child relationship as well. For instance, observations of cultural differences in mothers' reactions towards the child's behaviors (e.g., coping or discipline strategies) could be investigated in relation to maternal attributions and affect, and how the mother-child relationship may be differentially impacted depending on the child's attributions of the mothers' intentions behind her behavior.

Cultural comparisons in this study were conducted between only two groups: Euro-Canadian and Chinese immigrant mothers. Although Chinese immigrant mothers identified more strongly with their heritage culture than the mainstream culture, these mothers are likely more acculturated than Chinese mothers residing in their country of origin, either because they have assimilation into the mainstream North American society and/or because they held different values/beliefs even prior to immigration. Furthermore, a more detailed understanding of the process of acculturation (e.g., exploring whether attributions for positive child behaviors are more culturally engrained than those for negative child behaviors) could be gained by comparing mothers at different stages of acculturation. Future research would likely benefit from comparing attributions between Chinese mothers residing in their country of origin, Chinese immigrant mothers, Chinese-Canadian mothers (i.e., those who immigrated to Canada before the age of 18

years as well as identifying more strongly with mainstream culture than heritage culture), and Euro-Canadian mothers.

As causal attributions for child behavior differ in parents of children with behavior disorders as compared to parents of children without behavior problems (Dix & Lochman, 1990; Johnston & Freeman, 1997; Strassberg, 1995), research needs to examine differences in the attributions offered by Chinese-Canadian mothers of children with and without ADHD, and how such differences may be linked to emotional and behavioral responses to the child, as well as mental health service use. Moreover, previous literature concerning Asian individuals' attributions towards mental illness has focused on broader concepts of mental illness, asking participants to respond to a wide range of problems including developmental disabilities (e.g., mental retardation, autism; Ryan & Smith, 1989) and youth issues (e.g., alcohol/drug, emotional disturbance; Yeh et al., 2004), rather than on specific disorders such as ADHD, as was done in this study. More detailed examination of the perceptions and understanding of ADHD among Chinese immigrant mothers would be needed to determine if they have a different concept of ADHD compared to other mental illnesses.

Although SES was different between the cultural groups, with Chinese immigrant mothers scoring lower on SES than Euro-Canadian mothers, when used as a covariate, SES could not account for the cultural difference in responsibility attributions for child behavior. However, SES did show differential relations with attributions for positive versus negative child behaviors, such it was positively related to maternal responsibility attributions for prosocial child behavior but not for problem child behavior. This suggests that mothers of higher SES attribute more responsibility to the child for their prosocial behavior than mothers of lower SES. Future research could examine variations in attributions among mothers of different socioeconomic

status within a cultural group, as well as exploring possible factors that may be associated with SES differences in attributions for child behavior.

Although use of audio-taped scenarios may have helped to retrieve more immediate attributional responding, and feedback from mothers indicated that the scenarios were applicable to real-life situations, the scenarios used in this study had a singular focus on the child's behavior without supporting contextual information about the situation. This may explain why all mothers generally saw the child as responsible for all behavior regardless of culture, behavior type, or diagnosis (i.e., average responsibility ratings above 5 on a 1 to 10 scale). Thus, alternative scenario design (e.g., inclusion of contextual information), manners of presentation (e.g., video observation of interactions), methods of responding (e.g., in vivo during daily home activities/situations), and/or responding to the behavior of their own children that are more characteristic of "live" events should be explored as alternate methods of approximating mothers' actual beliefs and reactions.

Only the attributions of Chinese immigrant and Euro-Canadian mothers of boys were investigated in this study. Future research is needed to assess the attributions of fathers, parents from other cultural backgrounds, and the parental attributions for the behavior of girls as well.

Conclusion

In sum, this study found the expected result of a positive impact of ADHD diagnosis on maternal attributions for child behavior, as well as the cultural difference in the child-serving attributional bias between Chinese immigrant and Euro-Canadian mothers. Furthermore, this study contributes to the understanding of the interaction between culture and labeling on attributions for child behavior, in that mothers from both cultural groups were found to interpret the influence of ADHD in a similar fashion.

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Appendix A

Demographic/Background Questionnaire

Participant Number: _____

Date: _____

1. What is your age? _____
2. Country of birth _____
3. How long have you lived in Canada? _____
4. Ethnicity _____
5. What is your current marital status? (*check one*)
 - ☐ Single, never married.
 - ☐ Separated/Divorced.
 - ☐ Married.
 - ☐ Common law/Live in partner.
 - ☐ Widowed.
6. What is the highest level of education that you have completed? (*check one*)
 - ☐ Some high school.
 - ☐ High school or equivalent.
 - ☐ Trade school.
 - ☐ Some college.
 - ☐ College degree.
 - ☐ Graduate school.
7. What is the highest level of education that your child's father or step-father has completed? (*check one*)
 - ☐ Some high school.
 - ☐ High school or equivalent.
 - ☐ Trade school.
 - ☐ Some college.
 - ☐ College degree.
 - ☐ Graduate school.
8. Are you currently employed? YES / NO
-if so, what is your occupation? _____
9. Is your child's father or step-father currently employed? YES / NO
-if so, what is his occupation? _____

10. Please indicate:

The number of children you have _____

The ages of your children _____

The gender of your children _____

11. Choose 1 of your children as your target child. This child must be male, and must be within the age range of 5 and 9 years. If you have more than one child that fits these criteria, please choose the one who is closest to the age of 7 years.

Please indicate target child's name: _____

Note: You will answer the questions in one of the following questionnaires referring to this child.

Appendix B

Strengths and Difficulties Questionnaire (SDQ)

For each item, please mark the box for Not True, Somewhat True or Certainly True regarding the behavior of ***your target child***. It would help us if you answered all items as best you can even if you are not absolutely certain. Please give your answers on the basis of ***your target child's*** behavior over the last six months or this school year. **Participant Number:** _____

	Not True	Somewhat True	Certainly True
1. Considerate of other people's feelings			
2. Restless, overactive, cannot stay still for long			
3. Often complains of headaches, stomach-aches or sickness			
4. Shares readily with other children, for example toys, treats, pencils			
5. Often loses temper			
6. Rather solitary, prefers to play alone			
7. Generally well behaved, usually does what adults request			
8. Many worries or often seems worried			
9. Helpful if someone is hurt, upset or feeling ill			
10. Constantly fidgeting or squirming			
11. Has at least one good friend			
12. Often fights with other children or bullies them			
13. Often unhappy, depressed or tearful			
14. Generally liked by other children			
15. Easily distracted, concentration wanders			
16. Nervous or clingy in new situations, easily loses confidence			
17. Kind to younger children			
18. Often lies or cheats			
19. Picked on or bullied by other children			
20. Often offers to help others (parents, teachers, other children)			
21. Thinks things out before acting			
22. Steals from home, school or elsewhere			
23. Gets along better with adults than other children			
24. Many fears, easily scared			
25. Good attention span, sees work through to the end			

Appendix C

Vancouver Index of Acculturation (VIA)

Participant Number: _____

PLEASE ANSWER EACH QUESTION AS CAREFULLY AS POSSIBLE BY CIRCLING ONE OF THE NUMBERS FOR EACH QUESTION TO INDICATE YOUR DEGREE OF AGREEMENT OR DISAGREEMENT.

Many of these questions will refer to your heritage culture, meaning the culture that has influenced you most (other than North American culture). It may be the culture of your birth, the culture in which you have been raised, or another culture that forms part of your background. If there are several such cultures, pick the one that has influenced you most (e.g. Irish, Chinese, Mexican, Black). If you do not feel that you have been influenced by any other culture, please try to identify a culture that may have had an impact on previous generations of your family.

Please write your heritage culture (or the one that has influenced you most) in the space provided:

1	2	3	4	5	6	7	8	9
Strongly Disagree		Disagree		Neutral/ Depends		Agree		Strongly Agree

1. I often participate in my heritage cultural traditions
2. I often participate in mainstream North American cultural traditions
3. I would be willing to marry a person from my heritage culture
4. I would be willing to marry a North American person
5. I enjoy social activities with people from the same heritage culture as myself
6. I enjoy social activities with typical North American people
7. I am comfortable working with people of the same heritage culture as myself
8. I am comfortable working with typical North American people
9. I enjoy entertainment (e.g. movies, music) from my heritage culture

10. I enjoy North American entertainment (e.g. music, movies)
11. I often behave in ways that are typical of my heritage culture
12. I often behave in ways that are 'typically North American
13. It is important for me to maintain or develop the practices of my heritage culture
14. It is important for me to maintain or develop North American cultural practices
15. I believe in the values of my heritage culture
16. I believe in mainstream North American values
17. I enjoy the jokes and humor of my heritage culture
18. I enjoy typical North American jokes and humor
19. I am interested in having friends from my heritage culture
20. I am interested in having North American friends

Appendix D

Audio-taped Scenarios Scripts

1. Dust (impulsive)

Your child enters the kitchen just as you have finished sweeping the floor and getting the dust in a pile to pick up. Your child doesn't wait for you to finish and heads straight to the fridge. As he rushes through the kitchen, the pile of dirt scatters across the floor.

2. Toy (impulsive)

Your child is going through the hall closet looking for his toy. When he can't find it, he runs to where you are busy talking on the telephone. He keeps tapping you on the back and interrupting to ask you to help him find the toy.

3. Dessert (impulsive)

You are busy making dessert in the kitchen. Your child interrupts you constantly to ask questions about a project he is working on. He distracts you so often that you forget some of the ingredients for the dessert.

4. Dishes (impulsive)

You are in the kitchen starting to do the dinner dishes while the rest of the family is clearing the table. Your child brings some dirty plastic cups to the sink where you are washing dishes. Instead of just putting the cups in the sink, he drops them in as he walks by, and the soapy water splashes all over you.

5. Doctor (inattentive)

As you walk out to the car to leave for work, you remind your child to give his teacher a note you wrote last night explaining that the child must leave class early for a doctor appointment. Your child says he lost the note, so you have to go back into the house to write another one.

6. Remote control (inattentive)

You and your child sit down to watch a movie on TV. You ask your child for the remote control so you can set the VCR to tape the show for your cousin. Your child was the last person to use the remote, but he set it down somewhere and doesn't know where he put it.

7. Company (inattentive)

Your child is in the living room cleaning up his toys before you have company over.

Your child starts to pick up some toys, but then finds a joke book and begins to read it. When your company arrives and you have to go to the living room, there are still toys scattered about.

8. Dressed (inattentive)

Your child is getting ready for school. He starts to change out of his pajamas, but when you tell him you are ready to drive him to school, you find he is only partly dressed. You leave late for work because you have to wait for your child to finish getting ready.

9. Soup (active positive)

Your child and the family are around the kitchen table eating dinner. Your child has finished his bowl of soup and asks you to serve him some more. When you give it to him, he politely takes the bowl and says "thank you."

10. Utensils (active positive)

Your child and the family are getting ready to sit down for dinner one evening. You are bringing the food out to the dining table. On his way to the table, your child comes through the kitchen, and gets the utensils and brings them to the table.

11. Yard (active positive)

It is a hot, sunny afternoon and you are outside working in the yard. Your child comes home from school in the afternoon and goes into the house. In a few minutes, he comes back out into the yard and offers to help you.

12. TV listings (active positive)

You and your child are watching television one evening. The TV listings fall off the arm of the sofa and slide down between the sofa and the wall where it is hard to reach. Your child quickly gets down on the floor and reaches to retrieve the listings for you without being asked.

13. Ice cream truck (pleasant)

You and your child are working together on a project after school one day. After a while, you both notice the music of an ice cream truck playing outside. Even though your child likes ice cream, he remains at the table to work with you.

14. Chicken wings (pleasant)

You and your child are eating chicken wings together in the kitchen. Although he could probably still eat some more, you notice that your child doesn't take the last chicken wing for himself and offers it for you instead.

15. Late morning (pleasant)

Your alarm doesn't go off and you wake up late on a weekday. Your child has a field trip this afternoon and even though he is eager to get to school, he doesn't complain while he waits for you to get ready.

16. Puzzle (pleasant)

You have friends coming over to visit in a few minutes and you are tidying up the living room. Your child comes into the room, excited about putting a puzzle together on the floor. He sees that you have just finished cleaning up, and doesn't pour out the puzzle pieces all over the floor.

Appendix E

Dimensional Attributions Questionnaire (DAQ)

Instructions: We would like you to listen to several descriptions of children and answer questions about each of them. Before you begin, however, please read the following information.

Several of the questions you will be asked about the child reflect judgments people often make when looking for an explanation for why a child behaved as he did. For example, suppose you are walking down the street one day and see a child fall down. In such a situation, you would probably wonder why this child fell down. You could judge whether the child is at fault for falling (responsible), or whether the fall was due to causes beyond the child's responsibility. You might wonder if the child could help falling or not, for example, was he goofing around (cause was within the child's control) or was the fall caused by something outside of the child's control? Did he fall because he wanted to (intentionally), or was it due to an accident, perhaps there was a crack in the sidewalk (unintentionally)? You could also make a judgment as to whether the child should be blamed for the fall or not. Similarly, should the parents be blamed for the child's fall, for example, they were neglecting his safety needs, or were the parents not at fault for the fall? Finally, you might have an emotional response to the child's fall, either positive (pleased) or negative (upset).

We realize that there can be many things that influence behavior at the same time, and acknowledge that it can be difficult to make these types of judgments. There are no right or wrong answers, and if you have difficulty judging, just go with your first impression.

Listen to each scenario as if it were a new behavior on a new day, and try to vividly imagine yourself as the mother of the child being described in the scenario. After each scenario, answer the following six questions and **circle** the number that best reflects your thoughts.

DAQ-1

Scenario #: _____

Subject #: _____

1. To what extent would you hold the child responsible for this behavior?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10
 not at all completely
 responsible responsible

2. To what extent is the child's behavior something that was within the child's control versus something not within the child's control?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10
 not at all completely
 within his control within his control

3. To what extent do you think the child intended/meant to bring about this behavior?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10
 not at all completely
 intentional intentional

4. To what extent do you think the child is to be blamed for this behavior?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10
 not at all completely
 to be blamed to be blamed

5. To what extent do you think the child's parents are to be blamed for their child's behavior?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10
 not at all completely
 to be blamed to be blamed

6. To what extent are you upset or pleased by the child's behavior?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10
 extremely extremely
 upset pleased

DAQ-2

Scenario #: _____

Subject #: _____

1. To what extent would you hold the child responsible for this behavior?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10
 not at all completely
 responsible responsible

2. To what extent is the child's behavior something that was within the child's control versus something not within the child's control?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10
 not at all completely
 within his control within his control

3. To what extent do you think the child intended/meant to bring about this behavior?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10
 not at all completely
 intentional intentional

4. To what extent do you think the child deserves credit for this behavior?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10
 not at all completely
 deserves credit deserves credit

5. To what extent do you think the child's parents deserve credit for their child's behavior?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10
 not at all completely
 deserves credit deserves credit

6. To what extent are you upset or pleased by the child's behavior?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10
 extremely extremely
 upset pleased

Appendix F

Procedural Script

Introduction Script:

Informed Consent Forms

Thank you for coming in today. Before we get started, I'll briefly explain what your participation in this study will involve. This study will take approximately one hour. You will be asked to fill out some questionnaires to provide us some background information. After that, you will be asked to listen to some short audiotapes describing children, and make some ratings regarding each of these children's behavior. As a token of our appreciation for your participation, you will receive a UBC t-shirt for your child and \$20 reimbursement for your transportation expenses. You are free to withdraw from participation at any time during this study, and if you choose to do so, there are no penalties or costs associated with withdrawal. Do you have any questions about what we are going to be doing here today? Please read over this consent form and if you don't have any questions at that point, please sign the form, and I'll give you a copy of it to keep for your records.

Questionnaire Instructions Script:

Demographics/Background Questionnaire

Strengths and Difficulties Questionnaire

Here are two questionnaires that we would like you to complete so that we have some background information about you. Please fill out all the questions as best as you can, and do not leave anything blank. When you have finished, please hand them back to me, and we will move on to the next part of the study. Please feel free to ask me questions at any time.

Audio-taped Scenarios Script:*Dimensional Attributions Questionnaire*

In this next part of the study, you'll be listening to short audio-taped stories describing a range of child characteristics. There are 16 scenarios in total. Listen to each scenario as if it were a new day, and try to vividly imagine yourself as the mother of the children being described in the scenarios. Half of the scenarios apply to several children who have been diagnosed with Attention-Deficit/Hyperactivity Disorder (ADHD). ADHD refers to a pattern of behavior exhibited by children who are often easily distracted, often interrupt or intrude on others, or often fidget with their hands and feet or squirm in their seat. Children with ADHD display these characteristics more often than other children their age, and they often have difficulties relating to their family and friends, and often have difficulties with schoolwork as well. The other half of the scenarios apply to several other children who do not have any behavior problems. In order to help you keep track of whether the child being described in each scenario has ADHD or not, before playing the audiotape, I will state aloud and place a sign on the table to identify whether the child described in the next scenario has ADHD or not.

You'll listen to these scenarios one at a time, and be sure to listen carefully as you will only be able to hear each scenario once. For each scenario, you will answer six questions reflecting your judgment about why the child behaved in the manner described. Read through this instruction sheet as I go through it with you now. (*Go through example laid out on instruction sheet*). Immediately after each scenario, answer the six questions by circling the number that best reflects your thoughts. We will move on to the next scenario when you have finished. Do you have any questions? (*Proceed with scenarios and DAQ*)

I have one final question to ask you regarding the audio-taped scenarios. On a scale from 1 to 10, with 1 being the easiest and 10 being the hardest, how easy/hard (randomize order) was it to imagine yourself as the mother of these children described in the scenarios?

VIA Script: (for Chinese mothers only)

Vancouver Index of Acculturation

Lastly, we would like you to complete this final questionnaire so that we have some additional information about you. Please fill out all the questions as best as you can, and do not leave anything blank. Please feel free to ask me questions at any time.