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**PSYCHOLOGICAL DIFFICULTIES IN ADOLESCENTS:
THE ROLES OF ATTACHMENT TO PARENTS, SELF-CONTROL AND CULTURE**

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Summary

Adolescence is a transitional period from childhood to adulthood when a host of physical, social, and psychological changes and increased stress take place. These changes and stresses are likely to result in a variety of psychological difficulties (e.g., emotional problems, behavioral problems, and interpersonal problems) that place adolescents at great risks of mental health disorders (e.g., bipolar disorder, major depressive disorder, and schizophrenia), which have long-term adverse influences on individuals' development and functioning. Screening psychological difficulties among adolescents and an investigation into its protective factors as well as the underpinning mechanisms are therefore substantially important.

During adolescence, individuals are believed to invest more in peer relationship and gradually become independent from parents. However, a continued close relationship with parents (or also known as attachment to parents) still plays a crucial role in the prevention and intervention of adolescents' psychological difficulties because parents are still primary emotional support throughout adolescent period. If secure attachment to parents relates to fewer psychological difficulties among adolescents then what are the underlying mediators that explain this association? Secure attachment to parents facilitates emotional control and parents' socialization towards adolescents, which thus promotes adolescents' development of self-control. This implies that self-control may serve as a mediator in the "attachment to parents → psychological difficulties" link. In addition, relationship with parents may be influenced by one's cultural orientation and the overall association between attachment to parents, self-control, and psychological difficulties are bounded in a

certain societal context, together suggesting that both intercultural and intracultural factors may also play significant roles in levels of psychological difficulties and their association with attachment to parents and self-control.

The present research aimed to screen psychological difficulties in Chinese and Italian middle adolescents (aged 14-17 years), to investigate their association with attachment to parents and self-control, and to test the mediating role of (both trait and behavioral) self-control in the relationship between attachment to parents and psychological difficulties. In the meanwhile, the roles played by intercultural and intracultural variables were taken into consideration as well. To this end, three cross-cultural studies were carried out using multiple methodologies. In Study 1, both self-report and parent-report questionnaires were used to screen adolescents' psychological difficulties. In Study 2, self-report measures were utilized to assess attachment to parents, trait self-control, and psychological difficulties. In Study 3, self-report measures were employed to assess intracultural variable (i.e., individualism vs. collectivism), attachment to parents, and trait self-control. Furthermore, a behavioral task (i.e., the Stroop task) was employed to assess individuals' behavioral self-control. Across studies, intercultural factor (i.e., China vs. Italy) was treated as a categorical variable and a moderator.

Study 1 aimed to screen psychological difficulties in Chinese and Italian adolescents and to compare whether there were intercultural differences between the two samples. Two hundred and nineteen Chinese (88 boys, and 131 girls; age range: 14 - 17 years, $M_{\text{age}} = 15.37$ years, $SD = 1.06$) and two hundred and eighteen Italian (87 boys, and 131 girls; age range: 14 - 17 years, $M_{\text{age}} = 15.37$ years, $SD = 1.06$) adolescents and their fathers and mothers participated in the research. Chinese and Italian participants were recruited from Guangzhou, China and Venetian Region of

Italy, respectively. Adolescents and their parents filled out the self-report and parent-report Strength and Difficulties Questionnaire (SDQ and SDQ-P) respectively. The self-report and parents-report total difficulties scores based on the 20 items that assess various problems (i.e., emotional problems, peer problems, hyperactivity/inattention, and conduct problems) were used as indicators of adolescents' psychological difficulties. A series of ANOVAs were carried out in SPSS. The results mainly showed that the rates of psychological difficulties reported by Chinese and Italian adolescents were relatively low. In a similar vein, both Chinese and Italian parents reported their adolescent children had mild psychological difficulties. Furthermore, there was a significant intercultural effect, with Chinese adolescents reporting more psychological difficulties than their Italian counterparts. Similarly, Chinese parents also reported their children had more psychological difficulties than did Italian parents. No gender difference or "intercultural factor * gender" interaction was found. In addition, self-report psychological difficulties were higher than both father- and mother-report psychological difficulties, suggesting that the levels of adolescents' psychological difficulties varied across the reports of different informants.

Study 2 aimed to investigate the association between attachment to parents, self-control, and psychological difficulties, to examine the mediation of self-control in the relation between attachment to parents and psychological difficulties in Chinese and Italian adolescents, and to compare whether the direct and indirect effects were invariant between the two samples. Six hundred and forty-five Chinese adolescents (320 boys, 325 girls; age range: 14 - 17 years, $M_{\text{age}} = 15.50$ years, $SD = 1.12$) and six hundred and forty-one Italian adolescents (322 boys, 319 girls; age range: 14 - 17 years, $M_{\text{age}} = 15.50$ years, $SD = 1.11$) were recruited from Guangzhou (China) and

Venetian region of Italy, respectively. They answered a battery of questionnaires that assessed attachment to parents, trait self-control, and psychological difficulties. Multi-group path analysis was carried out in Mplus. The results showed that: (1) secure attachment to mother and high level of trait self-control were negatively related to psychological difficulties in both samples, whereas secure attachment to father showed a negative link with psychological difficulties only in Italian adolescents; (2) trait self-control mediated the association between attachment to parents and psychological difficulties both in Chinese and Italian adolescents; and (3) the direct and indirect effects were generally invariant between Chinese and Italian samples, with the only exception being that the association between attachment to father and psychological difficulties was stronger in Italian than that in Chinese adolescents.

Study 3 investigated similar questions as examined in Study 2 with some important differences. In Study 3, both intercultural and intracultural factors were taken into account and the Stroop task was also used to assess behavioral self-control. Specifically, the association between individualism-collectivism (i.e., intracultural variable), attachment to parents, trait and behavioral self-control, and psychological difficulties was investigated and the moderating effect of intercultural factor on the direct and indirect effects was also tested. Three hundred and seventy-six Chinese adolescents (157 boys, 208 girls, 11 missing; age range: 14 - 17 years, $M_{\text{age}} = 15.46$ years, $SD = 1.02$) and three hundred and seventy-four Italian adolescents (190 boys, 184 girls; age range: 14 - 17 years, $M_{\text{age}} = 15.50$ years, $SD = 1.02$) were recruited from Guangzhou (China) and Venetian region of Italy, respectively. They first worked on the computer-based Stroop task that assessed behavioral self-control and then filled out a series of questionnaires that assessed individualism-collectivism, attachment to parents, trait self-control, and psychological difficulties. Multi-group path analysis

was carried out in Mplus to analyze the data. The results showed that: (1) there was no significant difference in collectivism or individualism between Chinese and Italian adolescents; (2) attachment to mother showed a significant negative link with psychological difficulties only in Italian sample; (3) trait self-control was negatively related to psychological difficulties in both samples whereas high level of behavioral self-control was related to fewer psychological difficulties only in Chinese sample; (4) endorsement of collectivism was negatively related to psychological difficulties in both Chinese and Italian adolescents; and (5) several direct and indirect effects were moderated by intercultural factor.

In summary, the current findings showed that Chinese and Italian adolescents' psychological difficulties were relatively mild; both attachment to parents (especially attachment to mother) and self-control (especially trait self-control) were important protective factors of psychological difficulties; self-control (particularly trait self-control) partly explained how attachment to parents relates to fewer psychological difficulties; and both intercultural and intracultural factors played significant roles in the levels of psychological difficulties and their associations with attachment to parents and self-control. Implications for future research were discussed. Limitations and contributions were presented.

Keywords: Psychological health; Parent-child relationship; Self-control; Individualism-collectivism; Adolescents; Cross-cultural study.

Preface

Adolescence describes a period that starts at the onset of puberty and this term has been frequently described as a crucial transitional stage that connects childhood and young adulthood (e.g., Adams & Berzonsky, 2003; Buwalda, Geerdink, Vidal, & Koolhaas, 2011; Jessor, 1984, Meeus, Van de Schoot, Keijsers, & Branje, 2011; Nielson, 1991; Singer, 1984).

According to the World's Health Organization (WHO, 2005), adolescence refers to the period in human growth and development that takes place after childhood and before adulthood, from ages 10 to 19. A recent report of UNICEF (2012) states that there are 1.2 billion adolescents aged from 10 to 19 years old in the world, making up 18 percent of the world's population. Adolescents during different developmental stages have various developmental tasks. For example, early adolescents (10 - 14 years) are generally concerned with physical changes as puberty begins; middle adolescents (15 - 17 years) pay more attention to peer relationships, whereas late adolescents (18 - 21 years) tend to care more about future plans and career as they transit to young adulthood (Millstein, 1989).

A number of salient changes (e.g., physical, cognitive, emotional, social, and psychological) take place during this period (Kaplan, 2004). It is well known that except for infancy, adolescence is characterized by more biological, psychological, and social role changes than any other period of life (Felman & Elliot, 1990; Holmbeck, 1994; Holmbeck & Hill, 1988; Lerner, Villarruel, & Casterllino, 1999). These changes are believed to lead adolescents to be vulnerable to various psychological difficulties.

Evidence has consistently supported that adolescence is a time when different types of difficulties are more likely to happen than at other ages (for a review, see Arnett, 1999). Morbidity of psychological difficulties in adolescents is worth noting (Patel, Flisher, Hetrick, & McGorry, 2007; WHO, 2005). Psychological difficulties (e.g., emotional problems, conduct problems) that occur in adolescence will have long-term negative effects on individuals' psychological and social development across life-span and will predict the morbidity and comorbidity of later severe mental health disorders (e.g., Kieling et al., 2011; Merikangas et al., 2010; van der Molen, Vermeiren, Krabbendam, Beekman, Doreleijers, & Jansen, 2013). For these reasons, researchers have paid more attention to problematic and maladaptive behaviors than to normative and healthy behaviors in adolescents (Steinberg & Morris, 2001).

Given the negative effects of psychological difficulties on adolescents' subsequent developmental processes, screening psychological difficulties and identifying their protective factors as well as examining the underlying mechanisms and boundary conditions are important lines of research, as these studies deepen our understanding of the onset and developmental processes of adolescents' psychological difficulties and offer insights to the empirically-based prevention and intervention.

The onset and development of psychological difficulties among adolescents have been demonstrated to associate with a host of factors. First, some biological factors (e.g., genes, hormones) have been identified to associate with adolescents' psychological difficulties (Brooks-Gunn & Warren, 1989; Caspi et al., 2003; Kaltiala-Heino, Marttunen, Rantanen, & Rimpelä, 2003; Kim-Cohen, Caspi, Williams, Newcombe, Craig, & Moffitt, 2006; Siegel, Yancey, Aneshensel, & Schuler, 1999; Thompson, Parker, Hallmayer, Waugh, & Gotlib, 2011). Second, adolescents' psychological difficulties also relate to a number of psychological factors, such as

poor coping skills, maladaptive cognitive styles, negative self-evaluations, and so forth (DeYoung, Peterson, Séguin, & Tremblay, 2008; Hops, Lewisohn, & Roberts, 1990; Klonsky, Oltmanns, & Turkheimer, 2003; Krueger, Caspi, Moffitt, Silva, & McGee, 1996; Lynam, Caspi, Moffitt, Raine, Loeber, & Stouthamer-Loeber, 2005; Poikolainen, Aalto-Setälä, Marttunen, Tuulio-Henriksson, & Lonnqvist, 2000; Sund, Larsson, & Wichstrøm, 2003). Third, social factors such as family, neighborhood, and school also play a significant role in adolescents' psychological difficulties (Amone-P'Olak, Burger, Ormel, Huisman, Verhulst, & Oldehinkel, 2009; Aneshensel & Sucoff, 1996; de Róiste, Kelly, Molcho, Gavin, & Nic Gabhainn, 2012; Elliott & Menard, 1996; Gershoff et al. 2012; Hoeve, Dubas, Eichelsheim, van der Laan, Smeenk, & Gerris 2009; Keenan, Loeber, Zhang, Stouthamer-Loeber, & van Kammen, 1995; MacPhee & Andrews, 2006; McMahon, Wells, & Kotler, 2006; Meltzer, Goodman, Jenkins, & Brugha, 2006; Patterson, Dishion, & Yoerger, 2000; Prinstein, Boergers, & Spirito, 2001; Shek, 1998; Shochet, Dadds, Ham, & Montague, 2006; Stewart et al., 2004; Straus & Kantor, 1994; Vostanis, Graves, Wickrama & Kaspar, 2007; Wilkinson & Walford, 2001).

As mentioned earlier, investment of peer relationship is a major developmental task for middle-adolescents (Millstein, 1989). Although peers can give adolescents a lot of emotional support and comforting, adolescents at this period are still not emotionally independent from parents. This suggests that maintaining a close relationship with parents is still substantially pivotal to the adjustment among adolescents. In line with this, the present research mainly focuses on the influence of close relationship to parents (or attachment to parents) on adolescents' psychological difficulties.

Beyond the association between attachment to parents and psychological

difficulties, it would be also important to explore the working processes underlying this link. Previous research drawing upon “the working model of the self” proposed by Bowlby’s (1969, 1973) attachment theory demonstrates that positive evaluation about the self (e.g., self-esteem) is an important mediator in the relationship between attachment to parents and various psychological difficulties (e.g., Arbona & Power, 2003; Develcchio, 2013; Gomez & McLaren, 2007; Huntsinger & Luecken, 2004; McCormick & Kennedy, 1994; Wilkinson, 2004). Given the importance of close relationship to self-control (Fitzsimons & Finkel, 2010; Hofmann, Finkel, & Fitzsimons, 2015), in the present research I proposed that self-control could serve as another imperative yet understudied variable that potentially accounts for this association. The second focus of the present research is to test this possibility.

It is also worthwhile to note that psychological difficulties, attachment to parents, and self-control are confined to cultural context (e.g., Eshun & Gurung, 2009; Li, Delvecchio, Miconi, Salcuni, & Di Riso, 2014; Markus & Kitayama, 1991), suggesting that culture may be a boundary condition in adolescents’ psychological difficulties and their associations with attachment to parents and self-control. In addition, culture can be understood in terms of national-level (i.e., intercultural) and individual-level (i.e., intracultural; Triandis, 1995). However, a dearth of research has simultaneously taken both types of culture into consideration when examining adolescents’ psychological difficulties and their associations with protective factors.

To address these important gaps in the literature, the present research aimed to screen adolescents’ psychological difficulties, to investigate the protective effects of attachment to parents, and to test the mediating effect of self-control in adolescents. At the same time, the roles of culture (i.e., intercultural and intracultural factors) were also taken into account. To this end, the University of Padua (Italy) has initiated two

large-scale cross-cultural research projects collaborating with Guangzhou University (China) in 2012-2013 and 2015-2016, respectively.

Three empirical studies were carried out in this research using multiple methodologies. In the first part, the literatures of psychological difficulties, attachment to parents, self-control, and culture were reviewed in details and the gaps in the literature were summarized. The second part of the paper contained three empirical studies that examined four research questions step by step. Finally, results were summarized. Implications for future research were presented and limitations and contributions were discussed.

PART I: LITERATURE REVIEW

Chapter 1 Psychological difficulties in adolescents

Mental health disorders are a major public-health concern (Patel et al., 2007; WHO, 2005) and make up about 14% of the global burden of disease (Prince et al., 2007). Current estimates show that about 7-22% of all children and adolescents are faced with mental health problems (Costello, 2008; Kieling et al., 2011; Patel, Flisher, Hetrick, & McGorry, 2007). According to the National Comorbidity Survey Replication study, about 50% of Americans will meet the criteria for a DSM-IV disorder sometime in their life and adolescence is a critical period of the onset of such disorders (Kessler, Berglund, Demler, Jin, Merikangas, & Walters, 2005).

In a traditional point of view, adolescence is seen as a developmental period of optimum health (Millstein, 1989); but adolescents are often inclined to engage in various behaviors that dampen their health status (Curtis, 1992; Glied & Cuellar, 2003; Turner, Irwin, Tschann, & Millstein, 1993). Psychological difficulties that occur during adolescence place individuals at great risks of subsequent severe mental health disorders (e.g., Goodman, 1997) and therefore prevention and intervention of adolescents' psychological difficulties are important to facilitate healthy development among adolescents.

In this chapter, I overviewed the definitions of psychological difficulties, theoretical accounts that explain psychological difficulties among adolescents, and the assessment of adolescents' psychological difficulties.

Definition of psychological difficulties

In Offer and Sabshin (1984)'s work, they provided three different approaches (i.e., statistical-oriented approach, presence of optimal functioning and absence of psychopathology) to define psychological health described below. This research sheds great light on how to conceptualize psychological difficulties.

Regarding the statistical-oriented approach, they thought that psychological health could be defined as statistical average for adolescents or true for the majority of adolescents. However, this approach requires a prerequisite that a certain range is already obtained. With respect to the second approach, psychological health can be conceptualized as an ideal of optimal development and adaptive functioning. This conceptualization is proposed in the perspective of positive psychology (Duckworth, Steen, & Seligman, 2005; Irwin, 1987, Seligman, 2008) but it also receives criticism because it is too broad and cannot provide exactly what psychological health should be (Powers, Hauser, & Kilner, 1989). For the third approach, psychological health can be defined as the absence of clinically diagnosed psychopathology. This definition has been thought as more operationalized than the other two and thus is most conducive to empirical studies (Powers et al., 1989).

According to the last approach mentioned above, in this research psychological difficulties referred to the presence of various problems assessed by screening instrument. Specifically, psychological difficulties in this study were assessed using the Strength and Difficulties Questionnaire (e.g., Goodman, 1997) and were indicated by the total difficulties score of this scale. Detailed description of this measure is provided below.

Theoretical accounts of psychological difficulties in adolescents

Historically, psychological difficulties in adolescents were once understood as “*storm and stress*” (Hall, 1904) and considered as inevitable reactions during adolescence (e.g., Blos, 1962; Buchanan & Holmbeck, 1998; Erikson, 1959, 1966, 1968; Freud, 1946, 1958; Holmbeck & Hill, 1988). However, this view has been refuted later for two reasons. First, most adolescents are found to be actually capable to cope successfully without displaying any difficulties (e.g., Coleman, 1993, Steinberg & Morris, 2001; Van IJzendoorn & Bakermans-Kranenburg, 2010). The other evidence comes from epidemiological studies which have demonstrated that only about 10-20% of adolescents experience some types of severe emotional and behavioral upheavals and this rate is more or less the same as in adults (Offer, Ostrov, & Howard, 1981; Petersen, 1988). Apparently, this classic perspective is not much useful in explaining how adolescents’ psychological difficulties emerge and develop in modern era despite its profound historical influence. Nowadays, it has reached an agreement that psychological difficulties in adolescents result from multiple causes and should be understood in a more comprehensive view. A number of models that emphasize various etiological factors have been developed. Below, two relevant models (i.e., Bronfenbrenner’s ecological system theory and Jessor’s problem behavior theory) are briefly introduced.

Ecological system theory

Bronfenbrenner (1979) proposed an ecological systems theory to describe individual development. This theory identifies several interconnected systems to

explain individual developmental outcomes. These systems are microsystem, mesosystem, exosystem, macrosystem, and chronosystem. Specifically, microsystem is composed of individuals or the immediate settings (e.g., home, school) with whom adolescents have interactions. Microsystem is the proximal factor that affects individuals' life outcomes. Mesosystem refers to the inter-relations between two or more microsystems, each including the individual (Bronfenbrenner, 1979, 1986). Experience in one microsystem (e.g., parent-adolescents) may influence another (e.g., teacher-adolescents). Exosystem refers to the environment that the individual is not present, such as media and neighborhood. Macrosystem is considered as a cultural "blueprint" that may decide the social structures and activities that take place in the immediate system. It is composed of various factors such as cultural beliefs, norms, and religion. Chronosystem is thought of containing consistency or change of the individual and the environment over the life-span (e.g., family structure), but this system is not often talked about. These systems serve as a guidance of understanding the proximal and distal antecedents of human development. For example, microsystem (e.g., family) is assumed to be the most proximal factor that affects individuals' development whereas macrosystem (e.g., culture) is considered as a distal factor that influences one's development directly or indirectly through exosystem, mesosystem and microsystem.

Problem behavior theory

Problem behavior theory is a prevailing framework to explain adolescents' behavior and development and this theory has undergone three times of reformulation (Jessor, 2014). In the initial formulation of this theory (Jessor, Graves, Hanson, & Jessor, 1968), it proposes that one's behavior system is influenced by the sociocultural

system (system A, including components such as social control structure), the socialization system (system B, including components such as parental control structure) and the personality system (system C, including components such as personal belief structure). System A can both directly and indirectly (through system B) influence system C and all the three systems have a direct effect on behavioral system. In the intermediate formulation (Jessor & Jessor, 1977), three sets of variables are identified, namely antecedent-background variables (including both demography-social structure and socialization), social-psychological variables (including both personality system and perceived environment system), and social behavior variables (i.e., social behavior system). The antecedent-background variables may directly affect social behavior variables or indirectly through social-psychological variables. In the contemporary version of model which is proposed to explain adolescents' risk behavior, three hierarchical sets of factors are identified (Jessor, 1991). At the top level, five types protective factors are proposed (i.e., biology/genetics, social environment, perceived environment, personality, and behavior) and the two adjacent factors are reciprocally influenced. The medium level refers to adolescent risk behavior/lifestyles (i.e., problem behavior, health-related behavior, and school behavior). The bottom level is concerned with individual's health/life-compromising outcomes (i.e., health, social roles, personal development, and preparation for adulthood). The association between the two adjacent levels are bidirectional rather than unidirectional.

Summary

Despite some disparities, both Bronfenbrenner's ecological system theory and Jessor's problem behavior theory offer insights that adolescent adjustment outcomes

are related to multiple etiological factors and that these factors go hand-in-hand to rather than separately influence adolescents' developmental outcomes. These models not only provide explanations to the occurrence and the progressive processes of adolescents' psychological difficulties but also offer crucial implications for the prevention and intervention against such disadvantages. Based on these models (Bronfenbrenner, 1979; Jessor, 1991; Jessor et al., 1968; Jessor & Jessor, 1977), the present research investigated the roles of attachment to parents, self-control and culture in adolescents' psychological difficulties. The respective role of these factors will be reviewed in the subsequent chapters and therefore are not described here.

Assessment of psychological difficulties in adolescents

Numerous modalities can be used to assess adolescents' psychological difficulties, such as using clinically diagnosed interview and standardized questionnaires. Below, two worldwide popular instruments specifically designed to assess adolescents' psychological problems are reviewed.

The first measure is based on the Achenbach System of Empirically Based Assessment (ASEBA, Achenbach & Rescorla, 2001), which include a self-report measure (i.e., the Youth's Self-Report, YSR) and a parent-report measure (i.e., the Children's Behavior Checklist, CBCL). The former one can be used in adolescents aged 11 to 18 and the latter one can be used in both children and adolescents aged 6 to 18 (<http://www.aseba.org/schoolage.html>). These two forms of measures assess a variety of psychological symptoms that are empirically based (i.e., anxious/depressed, withdrawn/depressed, somatic complaints, social problems, thought problems, attention problems, rule-breaking behavior, and aggressive behavior) and

DSM-oriented (i.e., affective problems, anxiety problems, somatic problems, oppositional defiant problems, and conduct problems). These scales have been translated into over 90 languages and been globally used (e.g., Achenbach, Rescorla, & Ivanova, 2012; Ivanova, Achenbach, Rescorla, 2007; Ivanova, Achenbach, Dumenci, 2007; Rescorla et al., 2007, 2012; Van Oort, van der Ende, Wadsworth, Verhulst, & Achenbach, 2011).

A second widely used and popular measure is the Strength and Difficulties Questionnaire (SDQ, Goodman, 1997; Goodman, Meltzer, & Bailey, 1998). This scale contains self-report form (SDQ) applicable to adolescents aged 11 to 17 and parent-report form (SDQ-P) that can be used in children and adolescents aged 4 to 17. A total of 25 psychological attributes are assessed, including emotional problems, hyperactivity/inattentive problems, peer problems, conduct problems, and prosocial behavior. Psychological difficulties can be indicated by a total difficulties score calculated by summing up the four subscales that assess difficulties (i.e., emotional problem, hyperactivity/inattentive problems, peer problems, and conduct problems). This scale has been translated into over 80 languages and been utilized in a variety of countries (e.g., Atilola, Balhara, Stevanovic, Avicenna, & Kandemir, 2013; Goodman, 1999; Goodman, Ford, Simmons, Gatward, & Meltzer, 2000; Marzocchi et al., 2004; Obel et al., 2004).

Both measures are widely used. However, in the current research the SDQ is chosen as the measure of psychological difficulties for several reasons. First, both YSR and CBCL contain more than 100 items whereas the SDQ and the SDQ-P have a shorter format, both including only 25 items. This saves a lot of time for the participants, which is particularly conducive to the administration to parents. Furthermore, the SDQ has been shown to be as suitable as the CBCL and the YSR to

assess children's and adolescents' psychological problems (Goodman & Scott, 1999; Bettge, Ravens-Sieberer, Wietker, Hölling, 2002). Third, the SDQ and the SDQ-P better covers the problems such as inattention and peer relationships and these two instruments have a great ability to predict the occurrence of subsequent mental health disorder (Goodman, 1997; Goodman et al., 1998). Taken together, the SDQ and the SDQ-P were utilized to assess adolescents' psychological difficulties because these two measures appeared more appropriate for practical reasons in cross-cultural projects with large samples including both adolescents and their parents.

According to the items of SDQ and the SDQ-P, psychological difficulties can be viewed as a broad concept that contains various psychological problems such as emotional problems (e.g., sad, unhappy, fears), interpersonal problems (e.g., without friends, not liked by others, not getting along with peers), behavioral problems (e.g., disobedient, fight, dishonest), and hyperactivation problems (e.g., easily distracted, impulsive, restless). In light of this, the term "psychological difficulties" mentioned in the remaining part of the paper should be seen as a combination of emotional, interpersonal, behavioral, and attentional problems. In addition, the term "psychological difficulties" is used in lieu of "mental health problems" or "mental health disorders" because this measure is mere a screening tool and may not replace other clinically diagnostic assessment (e.g., comprehensive interview) although it has good discriminant validity of mental health disorders.

Chapter 2 Attachment to parents in adolescents

Attachment can be conceptualized as one's affective bond with significant others (Bowlby, 1969). In this definition "significant others" refers to those who are important in one's life. To the new born infants and children, "significant others" are usually those who provide care to them such as their parents. Parents are thought of as probably the most important attachment figures for individuals (Bretherton, 1992). In this research, attachment to parents can be defined as one's emotional bonding with parents. In this chapter, I mainly reviewed the attachment theory, assessment of attachment, and attachment during adolescence and its role in adolescents' psychological difficulties.

Attachment theory

Formation of attachment

According to Bowlby (1969), human beings are inherent with several innate psychobiological systems. The most fundamental one is called the *attachment behavioral system*, a system that motivates individual to seek proximity to attachment figures in times of need. The pre-set goal of this system is to let individual perceive or procure actual protection and security, and therefore, this system is supposed automatically activate when one perceives a sense of or comes across real threats. In this case, people with their attachment system activated automatically turn to their

attachment figures to seek comfort and security in order to survive and thrive. It is for this reason that attachment is considered a secure base for individuals to explore the world (Ainsworth, 1967; Bowlby, 1988).

Attachment begins to develop as soon as the child is born. The development of attachment to parents is strongly linked with the interactions with parents in terms of their availability, responsiveness, and supportiveness (Bowlby, 1973). When in need of comfort, food or something else, a baby supports his/her survival through various signals (e.g., crying). If parents are sensitive to the baby's signals and are available and responsive in times of needs, then the attachment system is facilitated to achieve optimal functioning, which greatly promote a core *sense of attachment security*, which, according to Shaver and Mikulincer (2005), refers to a sense "...[sense of attachment security] that the world is generally a safe place, that parents are generally helpful when called upon, and that it is possible to explore the environment curiously and to engage effectively with other people. (p. 26)" In contrast, if the attachment figures are not reliably available and a baby's demands receive no consistent response or support in times of need, then he or she is much less likely to develop attachment security, and as a consequence, he or she perceives that the world is not generally safe, that parents are not helpful, and this lowers the likelihood of exploration in the environment and engagement with others. In sum, secure attachment to parents develops through repeated interactions with parents from the moment one is born, and it is formed when perceiving parents as available, responsive, and supportive in times of needs. Given the differences in each person's parents' availability, responsiveness, and supportiveness, there exist individual differences in attachment security (Bowlby, 1973).

Internal working models

Bowlby (1973) postulated that interactions with parents can have enduring, long-term effects on one's personality development and life outcomes mediated by mental representation called "internal working models." According to Bowlby (1969), interactions with attachment figures such as parents are stored in memory in the form of mental representations. There are two types of working models, namely that working models of others and working models of the self. To illustrate, when a baby's needs are satisfied in a timely and reliable manner, he or she may develop a working model that others are generally helpful and that he or she is worthy being loved. Otherwise, the baby may develop a working model that others are not generally helpful and that he or she is not worthy being cared or loved if his/her needs are often rejected or unreliably attended. These working models are solidified through a fairly consistent pattern of interactions with attachment figures during childhood and adolescence, and the most representative model becomes part of a person's personality characteristics. Although the internal working models can be modified by emotion towards others and life events throughout the life span, they are assumed to persist over time and continue to influence how one perceives the self and others (Laible, Carlo, & Raffaelli, 2000; Wilkinson, 2004). Therefore, theorists (Ainsworth, 1989, 1991; Bowlby, 1969, 1973, 1980; Main, Kaplan, & Cassidy, 1985; Sroufe & Waters, 1977) have proposed that attachment to parents continue to affect one's cognition and emotion as well as other life outcomes during adolescence and even adulthood through various internal working models.

Attachment style versus quality of attachment relationship

The "continuity of attachment" hypothesis proposed by Bowlby (1969) suggests

that attachment experiences in childhood affect later relationships in adolescence and adulthood through “internal working models”, which has derived two distinct research orientations of attachment.

The first orientation is the examination of individual difference in attachment representations, which leads to a taxonomy of attachment styles (Wilkinson & Parry, 2004). Ainsworth (1979) first identified different types of attachment styles in infants using stranger-situation test. Hitherto, it is commonly agreed that there are three types of attachment styles, namely secure attachment style, avoidant attachment style, and ambivalent attachment style (Bukatko & Daehler, 1995). Other scholars (e.g., Bartholomew & Horowitz, 1991) also propose alternative attachment style in terms of the internal working model of the “self” versus the model of “other” among adults.

Research of adolescents’ attachment, by contrast, has focused on the quality of attachment relationships rather than discrete attachment styles (Wilkinson & Parry, 2004). As noted above, adolescence is a period with lots of changes such as expanding social networks of peer and intimate relationships. According to the continuity hypothesis of attachment theory, stable and secure attachment relationships with primary caregivers would result in stable and secure relationships with friends.

Previous research has incorporated these two terms and found that individuals with secure attachment history also possess higher quality of attachment relationships than those with avoidant and ambivalent attachment style (e.g., Muris et al., 2001). Nevertheless, these two orientations are distinct and should not be used interchangeably. Attachment style highlights the influence of the *past* attachment experience via mental representation; whereas quality of attachment relationship stresses how well individuals emotionally affiliated with caregivers *at the present time*. Moreover, the former approach is usually used in childhood and adulthood while the

latter one is often utilized in adolescence. This research mainly focuses on the quality of attachment relationship because adolescents comprise of the samples of this study and the term “attachment” discussed throughout the remaining paper refers to the quality of attachment relationship unless it is explicitly stated.

Assessment of attachment to parents in adolescents

Generally, there are two popular approaches to measure attachment to parents in adolescents. The first one is called the Adult Attachment Interview (AAI, George, Kaplan, & Main, 1984, 1985, 1986). This is a semi-structured interview that assesses adolescents’ recall of their parental care during childhood and their beliefs of the importance of such memories. Originally it is a measure specifically for assessing attachment security in adults but later it has been adapted for use with adolescents (Hesse, 1999).

The other widely used instrument is the Inventory of Parent and Peer Attachment (IPPA, Armsden & Greenberg, 1987). This measure assesses the quality of current attachment relationships with their parents and peers in adolescents. This measure originally consists of two sections, with one section assessing attachment to parents as a whole and the other assessing attachment to peer. In a revised version of the IPPA (IPPA-R, Armsden & Greenberg, 1989), the section of parent was segmented by assessing attachment to mother and to father separately with parallel wordings. A total score can be obtained by summing up all the items with some items reverse scored and a high score indicates higher quality of parent-adolescent attachment relationship.

Although both the AAI and the IPPA-R can be used to assess adolescents’ attachment, only the IPPA-R was used in the current research for two reasons. On the

one hand, it has been pointed out that although interview measures can be useful and uniquely revealing, these measures are not so practical for most researchers due to time and training necessary to administer them (Brennan, Clark, & Shaver, 1998). Indeed, the AAI is a time-consuming measure with a complicated scoring system. By contrast, the IPPA-R is a time-saving and cost-effective self-report measure that appears more suitable and feasible for large-scale cross-cultural comparison with thousands of participants. On the other hand, perhaps more important, the AAI primarily focuses on the mental representation and past attachment history whereas the IPPA-R assesses the current quality of present attachment relationship with parents. For these sakes, the IPPA-R appeared to be a better choice and was chosen to assess adolescents' attachment to parents. The detailed information of this self-report questionnaire can refer to the description of this scale in the second empirical studies.

Attachment to parents and its role in psychological difficulties during adolescence

Bowlby (1969) proposed that no one would be completely free of reliance on others and that attachment system would remain active over the entire life span. After stepping into adolescence, individuals become more independent from their family and engage in more emotional investment in their peers (Buhrmester, 1990; Harter, 2006; Inderbitzen, 1994). Therefore, an important task for adolescents is to balance their interpersonal relationships with friends while maintaining a supportive and warm relationship with their parents because family, especially parents, is still the fundamental source of emotional support and comfort for adolescents (Buist, Reitz, & Deković, 2008; Laible et al., 2000; Steinberg, 1990). This is consistent with previous

research that parents are still the primary figures adolescents turn to when they are confronted with extreme stress (Fraley & Davis, 1997; Huntinger & Luecken, 2004; Kamkar, Doyle, & Markiewicz, 2012). This indicates that although attachment to parents develops and is perhaps the most important at the early age of life, it continues to be crucial and influential of individuals' adjustment outcomes during adolescence (Cai, Hardy, Olsen, Nelson, & Yamawaki, 2013; Laghi, Pallini, Baumgartner, & Baiocco, 2012; Lee & Hankin, 2009; Tambelli, Laghi, Odorisio, & Notari, 2012).

Attachment to father and attachment to mother seem to be differentiated in adolescents. It has been reported that mother continues to be the preferred attachment figure until late adolescence, as evidenced by the fact that adolescents mostly turn to their mothers in times of stress and need for emotional support and comfort (Hazan & Zeifman, 1999; Markiewicz, Lawford, Doyle, & Haggart, 2006). A recent study (Li, Delvecchio, Miconi, Salcuni, & Di Riso, 2014) has compared adolescents' attachment to mother and attachment to father, finding that for Italian adolescents, both boys and girls report that they are more attached to mother than to father. Lieberman, Doyle, and Markiewicz (1999) also reported that adolescent girls considered their fathers less available and depended less on fathers than mothers.

Although adolescents generally become less emotionally involved and have less communication with fathers, they still consider fathers as a crucial attachment figure (Paterson, Field, & Pryor, 1995). Actually, the father can play a unique role despite the fact that they spend less time with their children (Markiewicz et al., 2001). For instance, fathers usually play with their children, through which they can build up emotional bonds with children and both adolescent boys and girls report they enjoy such interactions with fathers (c.f. Delvecchio, 2013). In a review that summarizes the influence of father absence on adolescent development (East, Jackson, & O'Brien,

2006), the authors conclude that father absence in general has an adverse effect on adolescent development, but that they are unaware of the precise underlying mechanisms of paternal variables particularly in multicultural perspective . This suggests that research into how attachment to father relates to adolescent psychological health in a cross-cultural perspective is paramount to fill this important gap in the literature.

Nevertheless, ongoing attachment relationship with parents is important to adolescents' development. A host of studies have related attachment to parents (as assessed with the IPPA or the IPPA-R) to a variety of psychological difficulties among adolescents (Armsden, McCauley, Greenberg, Burke, & Mitchell, 1990; Buist, Deković, Meeus, van Aken, 2004; Canetti, Bachar, Galili-Weisstub, De-Nour, & Shalev, 1997; Choon, Hasbullah, Ahmad, & Ling, 2013; de Vries, Hovee, Stams, & Asscher, 2016; Hovee, Stams, van der Put, Dubas, van der Laan, & Gerris, 2012; Li, Delvecchio, Lis, Nie, & Di Riso, 2015; Marcus & Betzer, 1996; Muris, Meesters, van Melick, & Zwambag, 2001; Nie, Li, & Vazsonyi, 2016; Pan, Zhang, Liu, Ran, & Wang, 2016; Savage, 2014; Simons, Paternite, & Shore, 2001; Tambelli et al., 2012; van Eijck, Branje, Hale III, & Meeus, 2012; Wilkinson & Walford, 2001). These studies consistently reveal that secure attachment to parents (or high quality of parent-adolescent relationship) is associated with fewer psychological difficulties.

The protective influence of attachment to parents on psychological difficulties appears important in different nations. For example, a recent research (Li, Delvecchio, Lis, et al., 2015) employed the IPPA-R to assess adolescents' attachment to parents and related it to depressive symptoms in Chinese and Italian adolescents, finding that both secure attachment to father and to mother were associated with fewer depressive symptoms in both samples.

Going beyond the direct effect, attachment to parents may also affect adjustment outcomes through different factors such as self-esteem (e.g., Delvecchio, 2013). In the present study, I proposed that this association can be also explained by self-control and this idea will be elaborated in the following chapters.

Chapter 3 Self-control in adolescents

Self-control is one of the most important psychological functions of human beings and has been studied in different branches of psychology (e.g., developmental psychology, personality psychology, and social psychology) as well as other social sciences disciplines (e.g., criminology, social work, education, etc.). In this section, I overviewed the definitions of self-control, theoretical accounts of self-control, different measures of self-control, development during adolescence, the impact of parent-adolescent attachment on self-control, and its relation to psychological difficulties

Definition of self-control

Although self-control has been extensively studied, it is defined differently. Self-control is often known as self-regulation, effortful control, self-discipline, inhibitory control, and so forth. Due to such a great number of analogous terms, the operational definitions of self-control vary widely and therefore it has been thought as a challenge to define self-control by scholars (Depue & Collins, 1999; Evenden, 1999; Whiteside & Lynam, 2001). In folk knowledge, a person with good self-control may be seen as less impulsive, more skilled at inhibiting their emotion, more prone to have a larger but delayed reward rather than a smaller but immediate reward, and so on. It is considered that voluntary self-governance in the service of personally valued goals and social standards and norms is the common conceptual thread that runs through these various terms (Duckworth & Kern, 2011). This notion is delicately captured by

Baumeister and his colleagues who defined self-control as “the ability for altering one’s own responses, especially to bring them into line with standards such as ideals, values, morals, and social expectations, and to support the pursuit of long-term goals” (Baumeister, Vohs, & Tice, 2007, p. 351).

One thing should be noted. Altering one’s own responses includes not doing the wrong thing and doing the right thing, which suggests that self-control may have two aspects ----- inhibition and initiation. This is agreed by previous literature which emphasizes that self-control effort may both override undesired responses and instigate desired responses (Baumeister, Bratslavsky, Muraven, & Tice, 1998). A recent study has confirmed that inhibitory self-control and initiation self-control are two distinct constructs and the former one serves as a better predictor of undesired outcomes whereas the latter one a better predictor of desired outcomes (De Ridder, De Boer, Lugtig, Bakker, & Van Hooft, 2011). Notwithstanding, given the unsophisticated assessment of initiation self-control, the inhibitory aspect of self-control is still dominant in the literature and therefore the self-control talked about in this present research mainly refers to its inhibiting function.

Another thing that should be kept in mind is the slight difference between self-control and self-regulation, as these two terms are often used interchangeably. Self-regulation is considered a broader term that entails several processes, including adopting, managing and monitoring thoughts, emotions, and behavior (Carver & Scheier, 1982, 1990). In these processes self-control may or may not be involved. A recent research separates self-control from self-regulation in terms of motivational conflict (Fujita, Carnevale, & Trope, 2016). The authors consider that not all self-regulation entails self-control challenges and that self-control is included in self-regulation processes only when motivational conflicts are present.

State vs. trait self-control

A number of models have been developed to explain self-control in the literature (Freud, 1961a, 1961b, Carver & Scheier, 1982; 1990; 2001; Myrseth, Fishbach, & Trope, 2009; Scheier & Carver, 1988; Trope & Fishbach, 2000). Two theoretical approaches, namely state self-control and trait self-control, are briefly reviewed below.

State self-control is based on the strength model (Baumeister et al., 1998; Muraven, Tice, & Baumeister, 1998; for a review, see Baumeister et al., 2007). According to this model, self-control is considered as limited resources that can be used in different domains (e.g., controlling thoughts, emotions, and impulses); once exerted in one domain, it is in a state of depletion like a muscle (Muraven & Baumeister, 2000), and subsequent tasks that require self-control may be poorly performed. This phenomenon is well known as “ego depletion” or “self-control depletion.” For instance, in Baumeister and his colleagues (1998) study, they required part of the participants to eat the radish but not the tasty cookie (depletion group) and the other half of participants did not receive such requirement (non-depletion group); then all participants performed an anagram test. They found that participants in the depletion group persisted less on the anagram test than those in the non-depletion group. Further research has found that self-control resources rely on glucose and supplement of glucose can increase self-control resources (Gailliot et al., 2007). A number of studies have supported that self-control depletion leads to a number of undesired and maladaptive behaviors (e.g., Gailliot & Baumeister, 2007; Mead, Baumeister, Gino, Schweitzer, & Ariely, 2009; Muraven, Collins, & Nienhaus, 2002; Xu, Bègue, & Bushman, 2012; for a review, see Hagger, Wood, Stiff, & Chatzisarantis, 2010).

The second approach is trait-oriented, also known as trait self-control or dispositional self-control. It is believed that self-control, akin to other personality traits, is a trait-like construct that persists over time and across diverse situations (Schmeichel & Zell, 2007). For instance, Mischel, Shoda, and Peake (1988) found that the ability of delay of gratification at age 4 or 5 predicted academic success 10 years later. Similarly, using a national representative sample a longitudinal study found that indicators of self-control at childhood predicted economic income and health at adulthood (Moffitt et al., 2011). Trait self-control is also documented by the self-control theory proposed by Gottfredson and Hirschi (1990). According to this theory, individuals high in self-control have the ability to delay gratification, have a long-term view in life and plan, and are more likely to think of others. On the other hand, individuals with low self-control are characterized as more impulsive, short-sighted, selfish, and prone to taking risks (Gottfredson & Hirschi, 1990). This theory also posits that self-control develops in childhood and becomes stable by early adolescence (around age 10); once it solidifies, it continues to be a key probabilistic construct important in explaining individual differences in a wide range of undesired behaviors (e.g., deviance, aggression) across life-span.

These two theoretical approaches contribute profoundly to the understanding of self-control. The influence of state self-control (or ego depletion) on various outcomes is momentary whereas the impact of trait self-control appears more enduring. However, the self-control strength model has been greatly challenged in recent years (for a review, see Carter, Kofler, Forster, & McCullough, 2015; Hagger et al., 2016). For instance, a registered replication study has been conducted by 23 different labs all over the world (Hagger et al., 2016), and the results were summarized using meta-analytic technique and suggested that the effect size of the ego depletion effect

was incredibly small (i.e., $d = .04$, 95% CI = [-.07, .15]). That said, not every manipulation leads to successful self-control depletion; and not all exertion of self-control in the first stage will result in poor performance in subsequent tasks. Some scholars even come up with competing ideas to explain why self-control may not seem limited (e.g., Inzlicht, Schmeichel, & Macrae, 2014). Although the scholars who propose the strength theory have recently responded to the near-to-zero findings with some new data (Cunningham & Baumeister, 2016), the impact of state self-control on various outcomes seem not as reliable as it is supposed to be. For this sake, the present study mainly focuses on trait self-control rather than state self-control.

Development of self-control during adolescence

A number of studies have addressed how self-control develops (e.g., Gilliom, Shaw, & Beck, 2002; Kopp, 1982; Vazsonyi & Huang, 2010). However, nearly all such studies have addressed this issue considering self-control as a whole. Recent research (Duckworth & Steinberg, 2015) describes the development of self-control between age 9 and 24 in substantial details by unpacking self-control as the combination of two distinct processes.

In this work, self-control has been viewed as a construct that consist of two distinguished processes, namely volitional processes and impulsigenic processes. Volitional processes rely on a broad of psychological components (e.g., executive functions, learned metacognitive strategies, etc.) facilitate self-controlled behavior whereas impulsigenic processes include various elements like sensation seeking and cravings that undermine self-controlled behavior. This conforms to other assumptions

that self-control and desire is similar to a tug-or-war (e.g., Hofmann, Friese, & Strack, 2009; Metcalfe & Mischel, 1999) and the final self-control performance is the result of the interplay of these two forces.

After reviewing the development of the elements that facilitate and erode self-controlled behavior, the authors criticize that past developmental studies wrongly assume individuals' impulsogenic tendencies remain constant across development and only focus on the volitional processes. By separately considering the developmental trajectories of volitional and impulsive processes of self-control, the authors postulate that development of self-control actually is the development of volitional and impulsogenic processes. According to this point of view, they summarize that one's impulse control ability continues increasing through age 9 to 24. Meanwhile, the strength of sensation seeking dramatically increases from age 9, becomes relatively stable at 14 to 15, peaks at 17, and then keeps diminishing onwards to age 24 (Steinberg, 2013).

Taken together, this suggests that one's ability to inhibit desires and urges keeps improving during adolescence while the strength of constructs that damage self-controlled behavior begin plummeting from late adolescence. Also, this implies that mid-adolescents (e.g., ages 14 to 17) may experience higher level of self-control conflicts than other stage of adolescence because during this period impulsogenic processes peaks whereas volitional processes are still in progress and have not reached its peak.

Attachment to parents and self-control in adolescents

The association between parent-adolescent attachment and self-control can be understood in two perspectives.

The first perspective pertains to the view that attachment to parents facilitates adolescents' emotional control. According to the attachment theory (Bowlby, 1969, 1973; Sroufe, 2000), in the processes of developing secure attachment to parents one may learn how to soothe himself/herself when runs into distress. Continued secure attachment to parents during adolescence is thought to be still important to facilitate individuals' emotional control (Lopez, 1995a; Simpson, Rholes, & Nelligan, 1992). These propositions suggest that secure attachment to parents helps adolescents develop better emotional control strategies and have better emotional ability (an important domain of self-control) and therefore adds to general self-control.

The second perspective is based on the self-control theory (Gottfredson & Hirschi, 1990). This theory proposes that one's self-control develops through parental socialization. Specifically, in order to instill self-control in children, caregivers (e.g., parents) must monitor the child's behaviors, recognize their undesired behaviors, and discipline these inappropriate behaviors in time. It also posits that a strong affective bond, or attachment between the child and the caregiver, is a crucial antecedent of these socializing processes. In other words, a close ongoing parent-adolescents relationship would facilitate parents to teach their adolescent children self-control effectively.

Empirical evidence from developmental psychology and criminology has consistently revealed that the secure attachment to parents or strong parent-adolescent bond is positively related to better self-control ability (e.g., Cheung and Cheung, 2008; Cretacci & Cretacci, 2012; Kobayashi, Vazsonyi, Chen, & Sharp, 2010; Miller,

Jennings, Alvarez-Rivera, & Lanza-Kaduce, 2009; Vazsonyi & Belliston, 2007; Vazsonyi, Wittekind, Belliston, & Van Loh, 2004). However, only a few studies (Li, Delvecchio, Lis et al., 2015; Nie et al., 2016) that address this issue have separately examined the influence of attachment to mother and attachment to father on self-control. Although fathers have been often considered as a secondary attachment figure, they actually play an important role in adolescent development (for a review, see East, Jackson, & O'Brien, 2006). The scarcity of studies testing father involvement in psychological research has been previously criticized as it leads to an incomplete picture of the familial context (Phares & Compas, 1992). This highlights the importance and the necessity of including measures of both maternal and paternal attachment in the current topic.

Self-control and psychological difficulties

The relation of self-control to psychological difficulties has been sufficiently documented. Scholars have considered that a variety of psychological difficulties, including both emotional (e.g., depression) and behavioral (e.g., substance use, antisocial behavior) problems origins from the inability of self-control (Baumeister & Heatherton, 1996; Baumeister, Heatherton, & Tice, 1994; Gottfredson & Hirschi, 1990). Converging evidence has found that good self-control relates to a host of desire life outcomes in adolescents, such as less psychopathology, fewer emotional and behavioral problems, better interpersonal relationships, better academic results, more satisfied with life, and so forth (e.g., DeWall, Gilman, Sharif, Carboni, & Rice, 2012; Duckworth & Seligman, 2005; Finkenauer, Engels, & Baumeister, 2005; Hofmann, Luhmann, Fisher, Vohs, & Baumeister, 2014; Li, Delvecchio, Lis, Nie, & Di Riso,

2016; Li, Nie, Boardley, Situ, & Dou, 2014; Tangney et al., 2004). A meta-analysis research (Ridder, Lensvelt-Mulders, Finkenauer, Stok, & Baumeister, 2012) reveals that trait self-control as assessed by various scales (i.e., the Self-Control Scale; the Low Self-Control Scale, and the Barratt's Impulsive Scale) shows a low-to-moderate effect to outcomes that related to psychological difficulties (e.g., interpersonal functioning and adjustment problems), suggesting the influences of trait self-control on psychological difficulties are consistent and robust.

The aforementioned literature focuses on the linear relationship between self-control and a wide range of life outcomes. Some scholars have also argued that extremely high self-control may have an adverse effect on life outcomes because people with extraordinarily high self-control may over inhibit their emotion and limit spontaneous enjoyment of life (Grant & Schwartz, 2011; Kremen & Block, 1998). However, some studies (Finkenauer et al., 2005; Tangney et al., 2004) have addressed the linear and U-shaped relationship between self-control and psychological difficulties and no research has supported the hypothesized view that extremely high self-control contributes to adverse outcomes. A recent study (Situ, Li, & Dou, 2016) has systematically addressed this issue using piecewise regression in three different samples (i.e., adolescents, university students, and employees), providing converging evidence that across samples too much self-control does not lead to maladaptive problems as some scholars (e.g., Grant & Schwartz, 2011) have argued.

Measurement of self-control

Owing to various analogous terms bearing on self-control, a number of measures have been developed to assess individual's self-control ability. Generally, these

measures fall within two broad categories ----- attitudinal measures assessed with questionnaires and behavioral measures.

Widely used questionnaires of self-control include Tangney et al.'s (Tangney, Baumeister, & Boone, 2004) Self-Control Scale and its brief version, the Barratt's Impulsiveness Scale (Patton, Stanford, & Barratt, 1995), and the Low Self-Control Scale (Grasmick, Tittle, Bursik Jr., & Arneklev, 1993) which is frequently used in criminological studies. A recent meta-analysis (De Ridder et al., 2012) have summarized and compared the relations of self-control assessed by these three scales and outcomes in different life domains, finding that the Tangney et al.'s (2004) scale appears more useful and consistent in linking trait self-control with various outcomes than the other two self-report measures.

Regarding the behavioral measures, the Stroop task (Stroop, 1935) and the Go/No-go task (Newman, Widom, & Nathan, 1985) are frequently used to assess individual's self-control ability. These two measures are primarily based on the inhibition component of executive control (or executive function) which has been thought to overlap with the concept of self-control (Hofmann, Schmeichel, & Baddeley, 2012). To illustrate, in the Stroop task, individuals are required to name the color of a word that depicts the color (e.g., the word "green" printed in "red"); therefore individuals need to inhibit the dominant response to the meaning of the word in order to name the color.

Self-control questionnaires and behavioral measures of self-control are thought to assess the same construct. In previous research self-control assessed by different modalities are often standardized and averaged to serve as indicator of overall self-control ability (e.g., Duckworth & Seligman, 2005). Duckworth and Kern (2011) conducted a meta-analysis to investigate the convergent validity of different

self-control measures. They found moderate convergence in the association between self-control questionnaires and behavioral self-control albeit the effect sizes were small and suggested using more than one measures to assess self-control. However, in a more recent research, scholars have found that self-report and behavioral measures of self-control do not appear to assess the same components of self-control and suggested that self-control assessed by questionnaires and behavioral measures (e.g., Stroop) should not be used interchangeably or aggregately (Allom, Panetta, Mullan, & Hagger, 2016).

Although there may be no or low correlation between trait self-control and behavioral self-control as assessed by behavioral self-control task such as the Stroop task, these two modalities are supposed to be theoretically consistent (i.e., both reflecting individual's inhibitory ability) and may capture different aspects of self-control. Therefore, it is still important and also interesting to test the roles of both trait self-control and behavioral self-control in psychological difficulties and their associations with attachment to parents. Therefore, both trait self-control and behavioral self-control were assessed in the final empirical study of the current research, which helps clarify the predictive utility of behavioral self-control in psychological difficulties among adolescents.

In the current study, trait self-control was assessed using the self-restraint subscale from the Adolescents' Self-Consciousness scale (Nie & Ding, 2009; Nie, Zhang, Peng, & Ding, 2007; Nie, Li, Situ, & Dou, 2014). This is mainly because this scale is specific to adolescents whereas the well-known BSCS (Tangney et al., 2004) is not. This scale is developed in the Chinese context to assess adolescents' trait self-control and has been validated in Italian adolescents (Delvecchio, Mabilia, Lis, Mazzeschi, Nie, & Li, 2014; Delvecchio, Mabilia, Miconi, Chirico, & Li, 2015),

whereas few studies have applied the BSCS to Italian adolescent samples so far. In addition, behavioral self-control is assessed with the computer-based Stroop task in this study as this is a popular measure to assess individuals' inhibitory ability. The detailed information of these two measures is described in the empirical chapters.

Chapter 4 Culture

Culture is a construct frequently studied by a wide range of disciplines (e.g., psychology, anthropology, etc.). Culture is important in shaping one's cognition, emotion, motivation (e.g., Markus & Kitayama, 1991; Triandis & Suh, 2002) and is also crucial in understanding psychological difficulties (e.g., Bass, Bolton, & Murray, 2007; Eshun & Gurung, 2009). In the following I first overviewed the definitions of culture, then reviewed a crucial dimension of culture (i.e., individualism-collectivism) and its assessment, subsequently Chinese and Italian cultures were also briefly introduced given that the current research was based on these two countries, and finally the influence of culture on psychological difficulties, attachment to parents and self-control were reviewed.

Definition of culture

Defining culture is by no means of an easy task because human social life is incredibly complex. The term “culture” was originally used in the social sciences by an anthropologist, Edward B. Tylor in 1871 (Tylor, 1974), who conceptualized culture as “that complex whole which includes knowledge, belief, art, law, morals, custom, and any other capabilities and habits acquired by man as a member of society (p. 1)”. Since then, culture has been defined in various perspectives that highlight a comprehensive view. A few examples are listed below:

“Culture is a configuration of learned behaviors and results of behavior whose component elements are shared and transmitted by the members of a particular society.”

(Linton, 1945, p. 32)

“Culture is the collective programming of the mind which distinguishes the members of one category of people from another.”

(Hofstede, 1984, p. 51)

“Culture should be regarded as the set of distinctive, spiritual, material, intellectual, and emotional features of society or a social group, and that it encompasses, in addition to art and literature, lifestyles, ways of living together, value systems, traditions, and beliefs.”

(UNESCO, 2002)

These examples stress that culture comprises different elements such as values, beliefs, norms, symbols, and behaviors. Therefore, Eshun and Gurung (2009) gave a general and more comprehensive definition of culture. They conceptualized culture as “a general way of life or behaviors of a group of people which reflect their shared social experiences, values, attitudes, norms, and beliefs that are learned, transmitted from generation to generation, and change over time (p. 4).” This definition of culture emphasizes two aspects: (1) culture reflects various elements (e.g., values, norms) of a group of individuals and (2) these elements could be tangible and intangible. They can be learned, changed, and transmitted. This definition was adopted in the present research.

Individualism and collectivism

Culture contains various dimensions (e.g., complexity, tightness-looseness, individualism-collectivism, masculinity, power distance; Hofstede, 1980; Triandis & Suh, 2002). Among these dimensions, individualism-collectivism is perhaps the most crucial framework to study cultural similarities and differences (Oyserman, Coon, & Kimmelmeier, 2002). Basically, there are two popular views about individualism-collectivism.

The first view about individualism-collectivism is that they are originally considered as two opposite poles on a unidimensional continuum (Hofstede, 1980, 1983, 1991). Individualism refers to a focus on rights above duties, a concern for oneself and immediate family, an emphasis on personal autonomy and self-fulfillment and accomplishment (Hofstede, 1980); on the contrary, collectivism refers to those who are interdependent with their in-groups (family, tribe, nation, etc.), give priority to the goals of their in-groups, shape their behavior primarily on the basis of in-group norms, and behave in a communal way (Mills & Clark, 1982). According to this view, individuals high on individualistic are low on collectivistic and vice versa.

The unidimensional categorization has been criticized for its oversimplification and more complex models have been proposed to improve this concept (Triandis & Gelfand, 1998; Freeman & Bordia, 2001). Specifically, individualism and collectivism are later viewed as two orthogonal dimensions. According to this view, people can be both individualistic and collectivistic at the same time (e.g., Oyserman et al., 2002; Triandis & Gelfand, 1998). This does not mean that people are collectivistic in one context and individualistic in another, but that “people may endorse both individualist and collectivist attitude statement within the same context” (Freeman & Bordia, 2001, p. 107). Later, individualism-collectivism was further divided into four categories by

Triandis and Gelfand (1998). These four categories are vertical individualism (VI); vertical collectivism (VC); horizontal individualism (HI); and horizontal collectivism (HC). Here, VI refers to a desire to be distinct and better than other members in the group; VC refers to an individual who places his/her group's goals over their personal goals; HI describes a desire to be distinct but not necessarily better than others in the groups, and HC describes an individual who stresses interdependence or the willingness to share common goals with others in the group.

Individualism and collectivism can be understood in both national-level and individual-level. This notion originates from the concept of national-level culture (also known as cross-culture or intercultural) and individual-level culture (also known as within-culture or intracultural), respectively. The former concept refers to a country's levels of individualism-collectivism based on Hofstede's (1980) seminal work. Hofstede gathered tremendous data using questionnaires from 40 nations in 1967 and 1971, and then using factor analyses he extracted several cultural dimensions (one of them was individualism) and found that some countries are more individualistic than others (Bond, 2002). National-level individualism-collectivism is usually assessed by treating different countries as dummy variables or using Hofstede's score of individualism. For example, according to Hofstede's data (<https://www.geert-hofstede.com/national-culture.html>), China is categorized as highly collectivistic country with a score on individualism of 20 whereas Italy is seen as a representative country of individualistic culture with a score on individualism of 76.

By contrast, individual-level individualism-collectivism describes individual differences in the levels of individualism-collectivism within the same country. That said, within a country, some people are more individualistic and less collectivistic

than others and vice versa. This notion is based on Triandis's view that individualism and collectivism are two orthogonal dimensions rather than the two poles on a continuum (Triandis, 1995; Triandis & Gelfand, 1998). Individual-level individualism-collectivism is usually assessed with self-report questionnaires such as the Interdependent and Independent Self-Construal Scale developed by Singelis (1994) as well as the Individualism and Collectivism Scale developed by Triandis and Gelfand (1998). The Singelis's scale focuses on a salient characteristic of individualism and collectivism ----- independent and interdependent self-construals. However, individualism-collectivism is an even broader concept that not only contains independent and interdependent self-construal, but also includes other connotations such as competitiveness and therefore individualism-collectivism should not be degraded into a single dimension (Green, Deschamps, & Paez, 2005). In line with this, the present study utilized Triandis and Gelfand's (1998) Individualism and Collectivism Scale to assess participants' individual-level of individualism-collectivism.

Overview of Chinese and Italian cultures

China is a developing country with largest population located in East Asia and Italy is a developed country located in Southern Europe. There are a lot of cultural differences in various aspects between these two countries.

Overview of Chinese culture

China has a history of over five thousand years and some historical beliefs are still influential on people's life today. Confucianism is one of the most crucial belief

systems in China. This system is complex including a variety of aspects, such as moral, social, political and philosophical notions. Two Confucian teachings are well ingrained in Chinese people's daily life (Liu, 2014). The first one is the Five Cardinal Relationships which depict five types of relationships and their obligations. These five kinds of relationships are ruler and subject, father and son, husband and wife, brothers, and friends. These relationships involve mutual and complementary obligations: the lower/younger ones are obliged to show respect and obedience to the higher/senior one; while the higher/senior ones are obliged to protect the lower/younger ones (Hofstede, Hofstede, & Minkov, 2010). The Five Cardinal Relationships were proposed to serve as the foundation to maintain the harmony of interpersonal relationship which is at the core of Chinese culture. To this end, Chinese people develop various harmonious ways to communicate with others. Courtesy, respectfulness, taking each other's face into account, minimizing the expression of emotion (particular anger), and avoiding confrontations are most often used strategies by Chinese to communicate. The other teaching of Confucianism is filial piety toward the family members. It is a great virtue of Chinese must be shown towards both the living and the dead. To this end, one (usually the offspring) must affirm and respect parent's intentions and actions, obey their rules, serve them in all their needs and honor them by achievement. This family value is still highly endorsed in the contemporary era although it was proposed over 2500 years ago (Ho, 1996).

China is often thought as a typical collectivistic culture. This is because Chinese children usually grow up with parents or other family members, learn to be a part of "we," give priority to the goals of the in-groups' (in particular the family's), and maintain harmony in the social environment, which are all reflecting the essential characteristics of collectivism (Hofstede, 1980; Hsu, 1983; Markus & Kitayama, 1991;

Oyserman, 1993; Triandis, 1995). An individualism score of 20 was found for China by Hofstede (<https://www.geert-hofstede.com/national-culture.html>), suggesting that Chinese culture is highly collectivistic.

However, some experts of Chinese culture (e.g., Bond, 2002; Ho, 1996; Yang, 1995) have argued that Chinese culture is not completely equal to collectivistic culture in nature because Chinese manifest both collectivism and individualism at the same time. Plus, individualism has been thought to increase as a country's Gross National Product (GNP) and the complexity of a society increase, such as the case of Japan (Triandis, Bontempo, & Villareal, 1988). China's economy has dramatically developed since 1990s when the opening policy was introduced and implemented. This has caused a close connection with Western culture and intensive competition in daily lives, which leads Chinese people to be more likely than ever to display behaviors that reflect individualistic culture although the collectivistic culture is still maintained and emphasized.

Overview of Italian culture

Italy also has a very long history but its cultures are discontinuous because of various reasons such as war and the disunion of the country (Barański & West, 2003). Nevertheless, Italy is the place where Renaissance took place and such renovations in various forms have been viewed as the symbol of individualism and was once predominately influential to the Italian culture (Nelson, 1933). Since its stable union, Italy has developed rapidly to reach the top in terms of its economy despite its recent recession (Inglehart & Oyserman, 2004); and its culture now has become less associated with an external aspect of life, but more and more with a lifestyle that hosts shared beliefs, tastes, languages, spaces, clothes, and political world-view of the

member of the group (Ward, 2001).

Italy is usually labelled as an individualistic country with a score of 76 on the individualism dimension (<https://www.geert-hofstede.com/national-culture.html>). Moreover, Italy is listed as one of ten most individualistic countries in the world (Schmitt & Allik, 2005). However, some scholars hold different opinions because the historically Roman Catholic societies such as Italy display relative traditional values when compared with Confucian societies such as China (Inglehart & Oyserman, 2004). In a recent survey administered to five countries (i.e., New Zealand, Portugal, China, Italy, and Romania), four clusters of culture are identified: low collectivism – high individualism; high collectivism – midlevel individualism; high collectivism – high individualism; and low collectivism – low individualism. These four clusters exist in each country and there is no evidence suggesting that Italians are less collectivistic than Chinese participants (Shulruf et al., 2011).

As a matter of fact, the Italian culture is probably both collectivistic and individualistic. This can be understood in two ways. On the one hand, a family orientation is present in Italian culture (Rabaglietti, Vacirca, Zucchetti, & Ciairano, 2012) and Italians endorse close connection to the family (Casiglia, Lo Coco, & Zappulla, 1998; Delvecchio, Di Riso, & Salcuni, 2016; Laudani, Giovanni, Lo Cascio, Pace, & Cacioppo, 2014). These are crucial characteristics of collectivism and reflect that Italians may be collectivistic to some extent. Second, self-expression, an indicator of individualism, is usually not limited among Italians (Inglehart & Oyserman, 2004). This is opposite to Chinese who need to minimize their expression of the self and emotions to be humble and respectful in order to maintain interpersonal harmony (Liu, 2014). Endorsement of in-group, family-interdependent, and self-expression reflect both the collectivistic and individualistic aspects of Italian culture to some extent. It

should be also kept in mind that Italians from the North and the South may show some substantial differences in terms of individualism-collectivism, with Italians of the Northern part being more individualistic and less collectivistic than those from the Southern part (Davis & Robinson, 1999).

Brief summary

In sum, traditional point of view by Hofstede (1980) considers China as a typical collectivistic country and Italy as a representative of individualistic country. However, this by no means suggests that Chinese are more collectivistic and less individualistic than Italian given the above qualitative analyses. This may be due to three main reasons summarized below.

First, Hofstede's (1980) categorization has been thought to be based on a simple methodology and thus his findings may not be generalizable (Bond, 2002; Voronov & Singer, 2002). This implies that the individualistic-collectivistic attributes of Chinese and Italian cultures may not be the case as has been assumed.

Second, even if the categorization of the Chinese and Italian cultures by Hofstede is correct, some have argued that national-level individualism-collectivism is not logically or empirically equal to individual-level individualism-collectivism (Bond, 2002).

Third, Hofstede's conclusion that Chinese culture is collectivistic and Italian culture is individualistic was drawn in 1980s (and based on data from that time) and not much has been revised since that time in terms of conclusion and implications. At that time, China was in many ways underdeveloped, while Italy was already well developed. According to Triandis and his colleagues (Triandis et al., 1988), the level of a country's individualism may increase parallel with its economic development. In

this sense, with all the economic development of China has accomplished since 1990s, the national-level of individualism of China may have changed. It has been thought that due to Chinese enormous economic growth and the increasing popularity of the Western values in China, the younger generation of Chinese youth has been thought as more individualistic than before although they still maintain collectivistic values (Liu, Chen, Li, & French, 2012).

For these reasons, one can no longer simply assume that Chinese culture is more collectivistic and less individualistic than Italian culture or vice versa. These arguments also suggest that the term “national-level individualism-collectivism” may not be entirely appropriate based on recent insights for the current study. Hence, the terms “intercultural” and “intracultural”, rather than “national-level and individual-level individualism-collectivism,” were used in the following empirical studies. Intercultural and intracultural factors were assessed by treating the two countries as categorical variable and using Triandis and Gelfand’s (1998) Individualism and Collectivism Scale, respectively.

Culture and psychological difficulties, attachment to parents, and self-control

In this section, the intercultural and intracultural influences on psychological difficulties, attachment to parents, and self-control are summarized as below before turning to the description of the current research.

Intercultural and intracultural influences on psychological difficulties

When talking about psychological difficulties, regardless of age group, culture is

greatly stressed by scholars (e.g., Eshun & Gurung, 2009; Leckman & Leventhal, 2008; Zhang, Norvilitis, & Ingersoll, 2007). It is commonly considered that there are substantial cultural variations in several aspects of mental health, including recognition, expression, levels, prevalence, help-seeking attitudes, treatment, and so forth (e.g., Eshun & Gurung, 2009; Kleinman, & Good, 2004).

There are both intercultural and intracultural variations in psychological difficulties. Regarding intercultural variations, it is often considered that people in some cultures are more inclined to suppress their emotions in order to maintain the harmony of relationships; at the same time they are more obedient to parents and behave themselves to express courtesy and politeness, thus yielding adolescents from these cultures to experience more emotional problems and less behavioral problems (Arrindell et al., 2004; Crijnen, Achenbach, & Verhulst, 1997; Falicov, 2003; Hashimoto, Mojaverian, & Kim, 2012; Jessor, Turbin, Costa, Dong, Zhang, & Wang, 2003; Matsumoto, Yoo, Nakagawa, & 37 members of the multinational study of cultural display rules, 2008; Ollendick, Yang, King, Dong, & Akande, 1996). Some studies have supported this view but inconsistent findings are present. For example, Chinese adolescents are found to report more anxiety than Italian adolescents (Delvecchio, Mabilia, Di Riso, Miconi, & Li, 2015; Li, Delvecchio, Di Riso, Nie, & Lis, 2016), but other research has also found that there are few intercultural differences in depressive symptoms between Chinese and Italian adolescents (Li, Delvecchio, Lis, Nie, & Di Riso, 2015). Furthermore, some studies have found that Chinese adolescents show less behavioral problems such as aggression than U.S. adolescents (Jessor et al., 2003; Forbes, Zhang, Doroszewicz, & Haas, 2009), but other research has also found that there is no significant intercultural variations in self-report aggression (Bergmüller, 2013).

With respect to intracultural variations, findings are also mixed. For example, Bhullar, Schutte, and Malouff (2012) examined the role of intracultural variable (i.e., individual-level individualism-collectivism) in emotional problems (i.e., depression and anxiety) in Australian (viewed as individualistic country) and India (viewed as collectivistic country) adults, finding that individualistic orientation was positively related to increased emotional problems in the Australian rather than Indian sample and that collectivistic orientation was a protective factor of emotional problems only in the Indian but not in Australian sample. In another research (Li, Wang, Wang, & Shi, 2010), intracultural variations in aggression were found in Chinese adolescents, with those who endorsed collectivism and individualism reporting less and more aggression, respectively. Scott, Ciarrochi, and Deane (2004) also found that being individualistic is related to more psychological difficulties.

Intercultural and intracultural influences on attachment to parents

Attachment theory has been considered as a pan-cultural theory whose main tenets are assumed universally applicable (e.g., Ainsworth & Marvin, 1995; Cassidy & Shave, 1999; Main, 1990; van IJzendoorn & Bakermans-Kranenburg, 2010; van IJzendoorn & Sagi, 1999). However, some scholars have disagreed with the universality of the attachment theory and called for further cross-cultural study (for a review, see Rothbaum, Weisz, Pott, Miyake, & Morelli, 2000). This is because the formation of attachment security is related to parents' parenting practices which are adapted to a certain cultural context. In this sense, parenting practices that are considered adaptive in one cultural context may not be entirely suitable in another, thus implying that research into the influence of culture on attachment is of great importance (for a review, see Keller, 2013).

Numerous studies have examined intercultural variations in attachment styles (e.g., Doherty, Hatfield, Thompson, & Choo, 1994; Frías, Shaver, & Díaz-Loving, 2014; for a review, see Van Ijzendoorn & Kroonenberg, 1988). However, only a few studies have examined the influence of interculture on quality of attachment relationship with parents in adolescents. For example, Li and colleagues (Li, Delvecchio, et al., 2014; Li, Delvecchio, Lis, et al., 2015) used the IPPA-R to examine the differences in attachment to parents in different cultures, finding that Italian adolescents reported more secure attachment to parents than their Chinese counterparts. In other similar studies, it is also found that American adolescents reported higher attachment to parents than Korean adolescents (Joo, 2010) and that Puerto Rican adolescents reported weaker attachment to parents than did American and Indian adolescents (Pearson & Child, 2007).

However, there is not much research addressing intracultural variations in attachment to parents in adolescents. A similar concept, namely familism which reflects one's idiocentric and allocentric orientation towards the family, is recently found to relate to attachment to parents in Italian adolescents, with people who are allocentric towards the family reporting stronger attachment to parents (Li, Lis, & Delvecchio, 2016).

Intercultural and intracultural influences on self-control

In their seminal work, Markus and Kitayama (1991) delineate the influence of culture on the self in terms of cognition, emotion, and motivation in substantial details. The self is a multifaceted construct that includes self-evaluation, self-experience, and self-control (Nie, Li, Dou, & Situ, 2014). In the following paragraph, both intercultural and intracultural variations in self-control are reviewed.

Regarding intercultural variations, self-control is thought as a variable that is particularly important and manifest in collectivistic culture (e.g., Kacen & Lee, 2002; Seeley & Gardner, 2002; Trommsdorff, 2009). This is because people in collectivistic culture are more often to control their emotion and behavior in order to maintain harmony of relationships and they are taught to inhibit their own emotions and behaviors since they are young, which would increase their self-control ability in the long run (Muraven, Baumeister, & Tice, 1999). Another claim of this view is that people from collectivistic culture exercise more self-control to avoid social punishment (Ent & Baumeister, 2014). Some previous studies have examined the intercultural variations in “executive function” and “self-regulation” (two analogous terms of self-control) in children (e.g., Lan, Legare, Ponitz, Li, & Morrison, 2011; McClelland & Wanless, 2015; Sabbagh, Xu, Carlson, Moses, & Lee, 2006). These studies generally find that children from collectivistic culture are more likely to report higher levels of self-control than those from individualistic culture. However, these studies focus on children rather than adolescent samples. An exception is a recent study which compares different aspects of the self between Chinese and Italian adolescents, finding that there are no differences in self-control ability between the two samples (Delvecchio, Mabilia, Miconi, Chirico, & Li, 2015; Li, Delvecchio, Lis, et al., 2015).

With respect to the intracultural variations in self-control, it appears that only one research has addressed this issue (Pyle, 2011). The author examined the association between individualism-collectivism and self-control using Tangney et al.’s (2004) Self-Control Scale-brief version and Triandis and Gelfand’s (1998) Individualism and Collectivism Scale, finding that there was no significant relation between intracultural variable and self-control (Pyle, 2011).

Chapter 5 The present study

After each construct has been systematically reviewed, there are some important gaps in the literature that warrant further study.

First, adolescent's psychological difficulties are related to culture, as there are both intercultural and intracultural variations in adolescents' psychological difficulties (Bhullar et al., 2012; Eshun & Gurung, 2009; Jessor et al., 2003; Li et al., 2010).

However, few studies have simultaneously addressed the roles of intercultural and intracultural factors in adolescents' psychological difficulties.

Second, previous studies have demonstrated that some self-related variables (e.g., self-esteem) mediate the association between attachment to parents and psychological difficulties (Arbona & Power, 2003; Develcchio, 2013; Gomez & McLaren, 2007; Huntsinger & Luecken, 2004; McCormick & Kennedy, 1994; Wilkinson, 2004).

However, the self is a complex system that not only contains self-evaluation, but it has been considered to consist of other components as well, such as self-control (Nie et al., 2014). Only a few studies have examined whether self-control plays a role in the association between attachment to both father and mother and (mal)adjustment outcomes (Li, Delvecchio, Lis, et al., 2015; Nie et al., 2016). More research of this issue is apparently necessary.

Last but not least, according to attachment theory (Bowlby, 1969), the influence of attachment on adjustment and its processes have been assumed to be applicable in various countries. However, little work has been done to examine the association between attachment to father and mother, self-control, and psychological difficulties in a cross-cultural perspective with few exceptions (Li, Delvecchio, Lis, et al., 2015).

In Li et al.'s (Li, Delvecchio, Lis, et al., 2015) research, they examined the relationship between attachment to parents, self-control, and depressive symptoms in Chinese and Italian adolescents, finding that self-control mediated the link between attachment to parent and depression and the working processes were invariant across the two samples. However, as reviewed above, culture contains both intercultural and intracultural effects. This exiting research only examined the role of intercultural effects but the influence of intracultural effects was not addressed. This is a substantial gap in the literature because both intercultrual and intracultural factors may play a significant role in the model and thus an investigation into this issue is necessary and of great importance.

Research questions

Given these gaps in the literature, the present research aimed to investigate adolescents' psychological difficulties and their association with attachment to parents and self-control taking both intercultural and intracultural influences into account. Specifically, several research questions were examined.

The first question was to examine whether there would be both intercultural and intracultural variations in adolescents' reported psychological difficulties. Previous studies have found that Chinese adolescents show more anxiety, as assessed by both self-report and parent-report measures, than their Italian counterparts (Delvecchio, Mabilia, Di Riso, et al., 2015; Li, et al., 2016), but no significant differences in depressive symptoms were found between these two samples (Li, Delvecchio, Lis, et al., 2015). Prior intracultural research reveals that endorsement of collectivism is protective of aggression in Chinese adolescents (Li et al., 2010). However, no

sufficient data was obtained regarding the association between intracultural factors and psychological difficulties in Italian adolescents. Hence, no specific results were expected at the moment and this research question was explorative rather than confirmative.

The second question was to examine the protective effects of attachment to parents and self-control on psychological difficulties in adolescents. According to Bowlby's (1969) attachment theory, an important function of secure attachment to parents is to facilitate adaptive and reduce maladaptive developmental outcomes (for a review, see Arnett, 1999). Based on self-control theory proposed by Gottfredson and Hirschi (1990) as well as the function of self-control proposed by other scholars (e.g., Baumeister et al., 1994; Baumeister & Heatherton, 1996), a lack of self-control is the core of a host of psychological difficulties. Previous studies have consistently found that secure attachment to parents and high level of trait self-control are crucial protective factor of various types of psychological difficulties among both Chinese and Italian adolescents (e.g., Li, Delvecchio, Di Riso, et al., 2015; Li, Delevecchio, Lis, et al., 2015; Situ et al., 2016). Therefore, it was expected that attachment to parents and high trait self-control would be associated with fewer psychological difficulties (Fig. 5.1). In Study 3, self-control was assessed both by self-report and behavioral measures. However, few studies have been done to examine the association between attachment to parents, behavioral self-control and psychological difficulties in Chinese and Italian adolescents. Thus, this issue was also left as an open question.

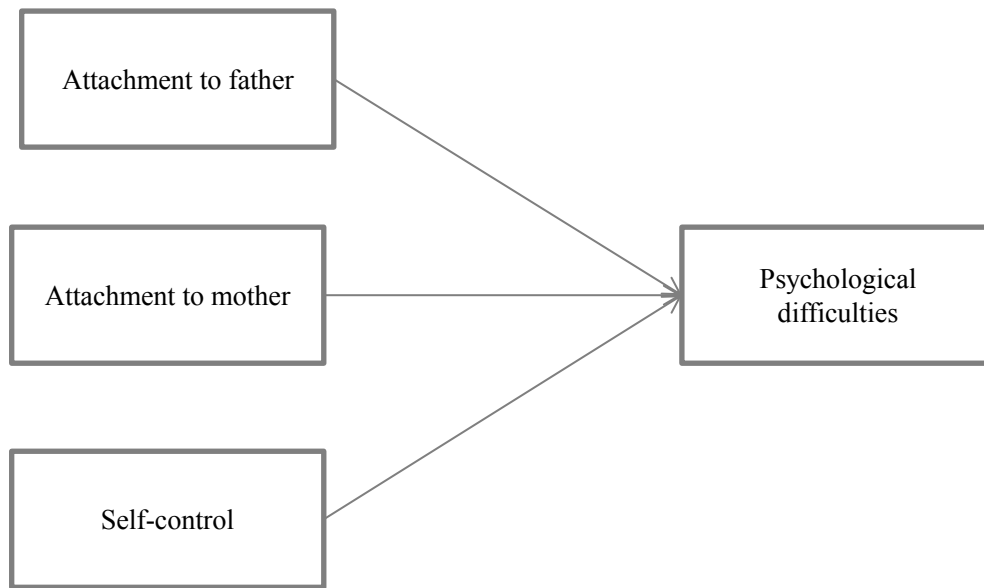


Figure 5.1 Illustration of the protective effects of attachment to parents and self-control on psychological difficulties; error correlations are not shown for simplicity

The third question was to examine whether attachment to parents would intervene with self-control to influence psychological difficulties among adolescents. As stated earlier, secure attachment to parents or high quality of current attachment relationship with parents is conducive to emotional and impulsive control, which therefore associates with better adjustment outcomes. In addition, the self-control theory also proposes that a strong parent-child affective bond promotes the development of the child's self-control (Gottfredson and Hirschi, 1990; Hope, Grasmick, & Pointon, 2003; Miller et al., 2009; Özdemir, Vazsonyi, & Çok, 2013). Also, a lack of self-control has been viewed as the core cause of various psychological difficulties (e.g., Baumeister et al., 1994; Baumeister & Heatherton, 1996). Taken together, it suggests that self-control is likely to link attachment to parents with psychological difficulties. Previous research has found that attachment to parents is positively related to self-control, which in turn relates to diminished depressive symptoms in both Chinese

and Italian adolescents (e.g., Li, Delevecchio, Lis, et al., 2015). In light of these findings, it was expected to find that self-control would mediate the association between attachment to parents and psychological difficulties in both samples (Fig. 5.2).

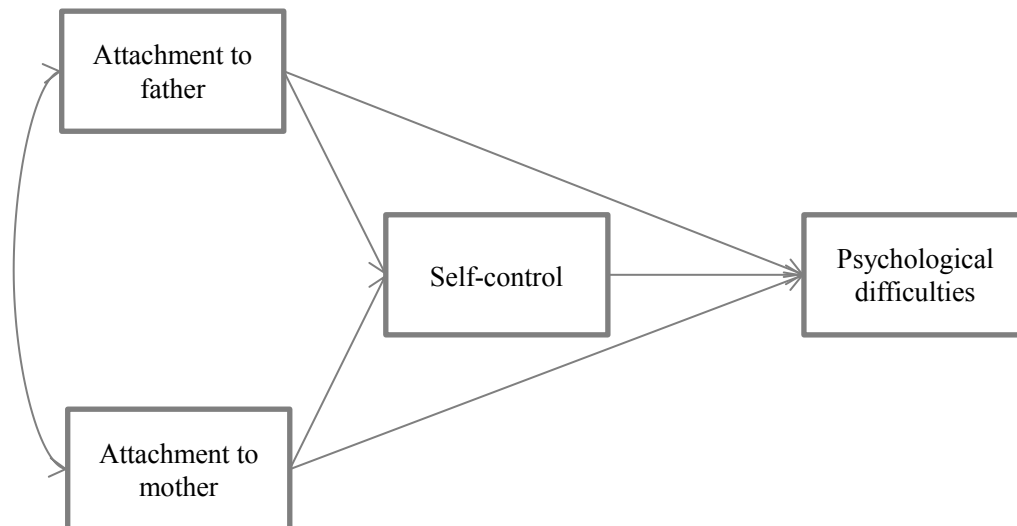


Figure 5.2 Illustration of the path model of the association between attachment to parents, self-control and psychological difficulties

The fourth question was about whether both intercultural and intracultural factors played a role in the association between attachment to parents, self-control, and psychological difficulties. It was assumed that intercultural and intracultural factors would play different roles in the model. Regarding the role of intercultural factor, previous evidence has supported that the mediation model of self-control in the relationship between attachment to parents and depressive symptoms is invariant across Chinese and Italian adolescents (Li, Delevecchio, Lis, et al., 2015). In the current study, the role of an intercultural effect was examined by comparing whether the association between attachment to parents, self-control, and psychological

difficulties differed across the Chinese and Italian samples. It was expected that the direct and indirect effects would be equivalent in both samples (Fig. 5.3).

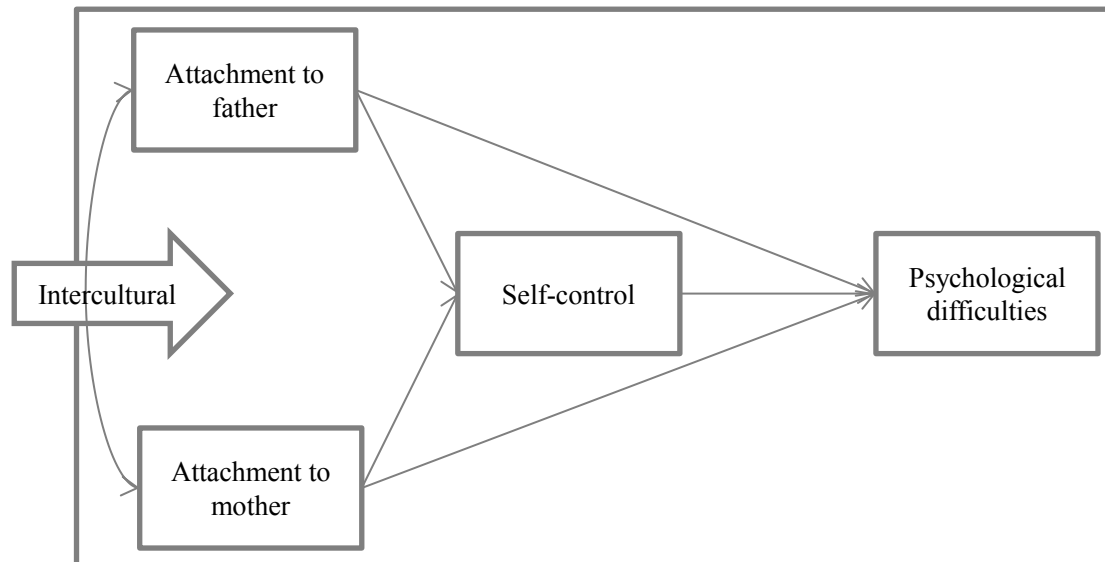


Figure 5.3 Illustration of the moderation of intercultural factor on the path model of the association between attachment to parents, self-control and psychological difficulties

Regarding the role of intracultural factor, based on the assumption that one's psychological culture shapes his/her cognition, emotion, and motivation (Markus & Kitayama, 1991; Triandis & Suh, 2002), it was expected that intracultural factor (i.e., individual-level individualism-collectivism) played a role by acting as an antecedent of the variables examined. In addition, it was also interesting to examine whether this model was moderated by intercultural factor. Research into this question helped close the gap in the literature by simultaneously examining both intercultural and intracultural variations in the “attachment to parents → self-control → psychological difficulties” link. Given that scant research has addressed this topic, this question remained open and exploratory (Fig 5.4).

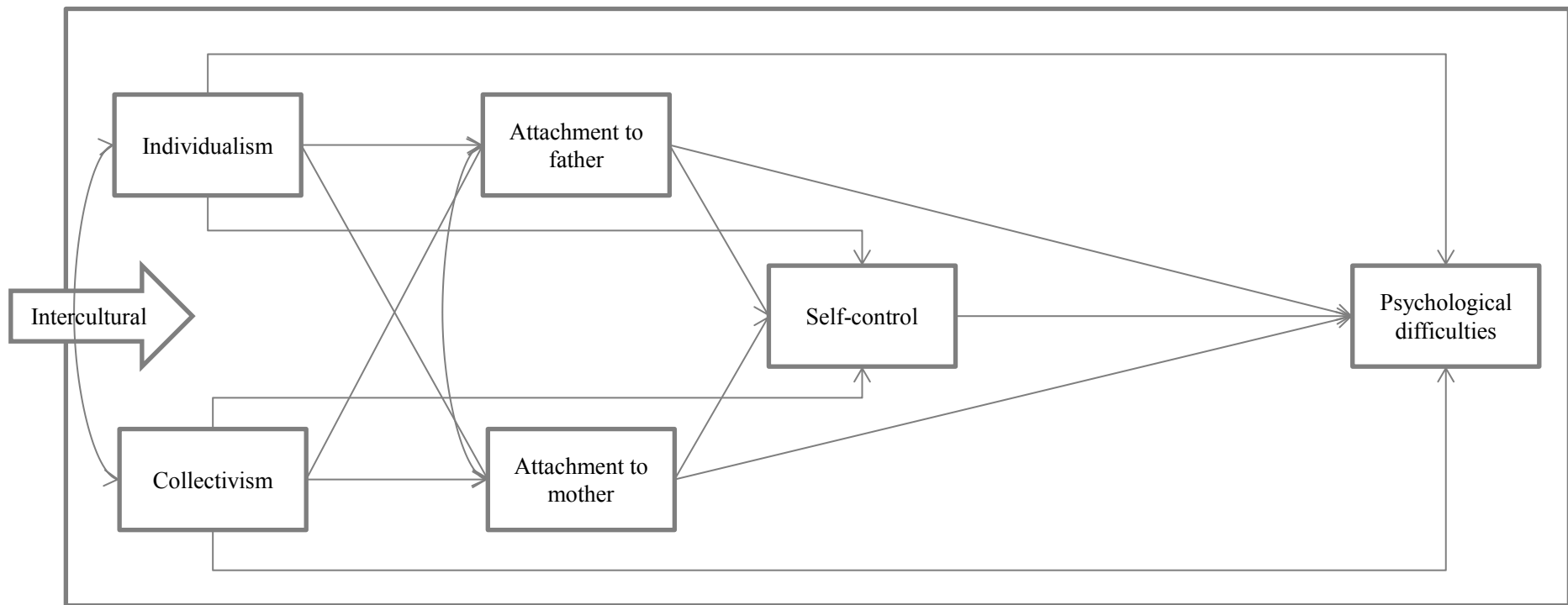


Figure 5.4 Illustration of the moderation of intercultural factor on path model of the association between intracultural factor (i.e., individualism and collectivism), attachment to parents, self-control and psychological difficulties

Overview of the current research

Three empirical studies were carried out to address the research questions proposed above. These studies were based on two large cross-cultural projects collaborated between Guangzhou University (China) and the University of Padua (Italy) which took place in 2012-2013 and 2015-2016, respectively. The two projects were short-term longitudinal and cross-sectional in nature, respectively, with a few differences in the inclusion of variables, report-informants and assessment modalities.

Study 1 was based on the first cross-cultural project that was conducted during 2012-2013. The main goal of this study was to examine the intercultural variations in psychological difficulties by comparing self-report and parent-report psychological difficulties between Chinese and Italian adolescents.

Study 2 was also based on the first cross-cultural project that was carried out during 2012-2013. The main goal of this study was threefold. First, it was designed to investigate whether attachment to parents and trait self-control were protective factors of psychological difficulties in both Chinese and Italian samples. Second, it also aimed to test whether trait self-control mediated the association between attachment to parents and psychological difficulties. Third, it continued to test the intercultural variations in the mediation model by comparing whether the relationship between attachment to parents, self-control, and psychological difficulties differed between Chinese and Italian adolescents.

Study 3 was based on the second cross-cultural project conducted in 2015-2016. The goal of this study was to examine the intercultural and intracultural variations in the relationship between attachment to parents, (trait and behavioral) self-control and psychological difficulties. Intracultural effects were treated as antecedents of

attachment to parents, (trait and behavioral) self-control, and psychological difficulties. Direct effects and indirect effects were tested and compared.

The mapping of the three empirical studies onto the research questions is presented in Figure 5.5.

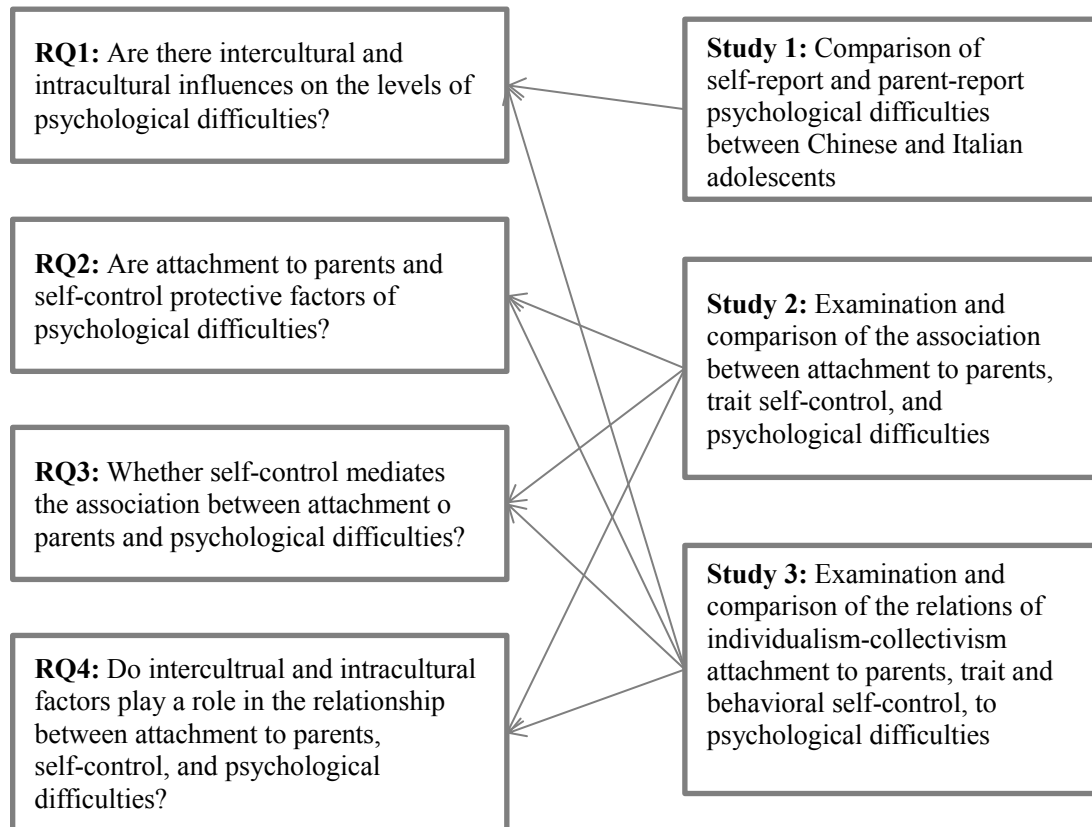


Figure 5.5 Mapping of empirical studies onto the research questions

Note: RQ = research question

According to Figure 5.5, RQ1 was examined in Study 1 and 3. In Study 1, only the intercultural variations were examined whereas Study 3 investigated both intercultural and intracultural variations in adolescents' psychological difficulties. RQs 2, 3, and 4 were examined in both Study 2 and 3. Both studies tested the overall association between attachment to parents, self-control, and psychological difficulties,

the mediation of self-control in the relationship between attachment to parents and psychological difficulties, and the similarities/differences in the direct and indirect effects between the Chinese and Italian samples. RQ 4 was further examined in Study 3 which tested the roles of both intercultural and intracultural factors in psychological difficulties and their association with attachment to parents and self-control.

Across the three studies, the Strength and Difficulties Questionnaire was used to assess psychological difficulties, and the total difficulties score served as the indicator of psychological difficulties as previous studies did (Goodman & Goodman, 2009; Green, McGinnity, Meltzer, Ford, & Goodman, 2005; Halvorsen, Stern, Dalgard, Thoresen, Bjertness, & Lien, 2011; Kashala, Elgen, Sommerfelt, & Tylleskar, 2005; Ravens-Sieberer et al., 2008; Shochet, Dadds, Ham, & Montague, 2006; Stadler, Feifel, Rohrman, Vermeiren, & Poustka, 2010). In Study 1, both father-report and mother-report total difficulties scores were utilized in order to provide converging evidence for intercultural variations in adolescents' psychological difficulties.

Questionnaires were used to assess the variables of interest in Study 1 and 2. In study 3, a behavioral measure of self-control (i.e., the Stroop task) was also included in order to partially rule out common shared variance.

In Study 2 and 3, multi-group path analyses were carried out to examine the association between attachment to parents, self-control, and psychological difficulties. This statistical strategy allows examining the relationship of these variables, testing the mediation of self-control, and directly comparing the direct and indirect effects simultaneously in one analysis. The main reason to choose path model rather than latent model was because all variables examined in the current research were observed rather than latent, and constructing latent variables using strategies like parceling technique (e.g., Little, Cunningham, Shahar, & Widaman, 2002) seems

inappropriate because item parceling in one sample is unlikely to be completely applicable in the other sample. This may lead to findings that are largely a method artifact rather than substantive.

In sum, the current mixed-method research project aimed to employ multi-informants, both paper-and-pencil and behavioral measures, and multi-group analysis to investigate the adolescents' psychological difficulties and their associations with attachment to parents and self-control taking the roles of intercultural and intracultural factors into consideration as well.

PART II: EMPIRICAL STUDIES

Chapter 6 Study 1

Background

The main goal of the current study was to investigate the intercultural variations in psychological difficulties between Chinese and Italian adolescents. In order to provide converging evidence, data were collected from three sources (i.e., self-report, father-report, and mother-report).

Method

Participants

The data of the present research were from the data bank of a large scale cross-cultural study that was conducted during 2012 and 2013. The sample of this research consisted of a total of 437 adolescents and their parents. Of these, 219 Chinese adolescents (88 boys, and 131 girls; age range: 14 - 17 years, $M_{\text{age}} = 15.37$ years, $SD = 1.06$) and their parents were recruited from Guangzhou, a well-developed city located in Southern China; and 218 Italian adolescents (87 boys, and 131 girls; age range: 14 - 17 years, $M_{\text{age}} = 15.37$ years, $SD = 1.06$) and their parents were recruited from Venetian region of Northern Italy. A small portion of participants indicated they were from single-parent family in both countries and these participants were excluded to balance the sample. Moreover, the current Chinese and Italian samples indicated that they and their parents were Chinese and Italian of their respective countries, with Chinese and Italian as their native language, respectively.

Measures

Psychological difficulties

The Strength and Difficulties Questionnaire (SDQ, Goodman, 1997; Goodman et al., 1998; Goodman, Lamping, & Ploubidis, 2010) was employed to measure participants' psychological difficulties. This worldwide-used measure is a brief behavioral screening scale about 4-17 years (www.sdqinfo.com). The SDQ includes three versions (i.e., self-report, parent-report, and teacher-report) and the self-report and parent-report versions were used in the current study.

Self-report SDQ

The self-report SDQ has been translated into a variety of languages and widely used. This scale consists of five dimensions with 5 items in each dimension, namely, emotional problems, peer problems, conduct problems, hyperactivity, and prosocial behavior. The first four dimensions assess psychological difficulties and the last dimension usually serves as an indicator of adjustment.

This measure has numerous advantages such as time-effective, freely available and not copyrighted, and good face as well as discriminant validity. It has been translated into over 80 languages and used around the globe. However, the psychometric properties of this measure have been intensively debated. Some studies have supported the five factor structure and demonstrated good reliability (e.g., Goodman, 2001; He, Burstein, Schmitz, & Merikangas, 2013), but some other researches have failed to support its original factor structure or reveal adequate reliability (e.g., Di Riso, Salcuni, Chessa, Raudino, Lis, & Altoè, 2010; Liu, Chien, Shang, Lin, Liu, & Gau, 2013). There are also some studies addressing the psychometric properties of the self-report SDQ in Chinese and Italian adolescents (Di

Riso et al., 2010; Du, Kou, & Coghill, 2008), but the results show that its five factor structure is not always supported and that the Cronbach's α of some subscales are low (i.e., $< .60$). For example, in Du et al.'s (2008) study, the Cronbach's α of the peer problems subscale was only .30. Notwithstanding, the total difficulty scale consistently shows good reliability and possesses high face validity. Thus, in the present study, the total difficulties score based on the 20 items that assess psychological difficulties was used as the indicator of participants' psychological difficulties.

All items are rated on a three-point scale (from "0 = not true" to "2 = certainly true"). A total score can be obtained by summarizing all the 20 items, and a higher score indicates more psychological difficulties. Sample items include "I worry a lot." "I fight a lot." "I am restless." "I get very angry and often lose my temper." and "I am often unhappy, down-hearted or tearful." The Cronbach's α of the total difficulties scale of self-report SDQ was .74 (95% CI = [.69, .79]) for Chinese adolescents and .78 (95% CI = [.73, .82]) for Italian adolescents.

Parent-report SDQ

The parent-report version of SDQ is similar to the self-report version of SDQ with parallel wordings. The parent-report SDQ also consists of 25 items which can be divided into five dimensions: emotional symptoms (5 items), conduct problems (5 items), hyperactivity/inattention (5 items), peer relationship problems (5 items) and prosocial behavior (5 items).

Like self-report SDQ, the parent-report SDQ has been translated into different languages and broadly used. The psychometric properties of the parent-report SDQ also receive much criticism, as the internal reliability of some subscales is low. For

example, in Du et al.'s (2008) research based on a sample of Chinese parents, the internal reliability of the peer problems and conduct problems subscales was only .30 and .48, respectively. The internal reliabilities of these two subscales are also less than satisfactory in Italian sample, as a recent research (Li, Delvecchio, Di Riso, Lis, & Salcuni, 2016) found that the Cronbach's α of the peer problems and conduct problems subscales of the parent-report SDQ in Italian mothers was .51 and .52, respectively. However, the reliability of the total difficulties appears much better than that of subscales, and this suggests that it would be better to utilize the total difficulties score as dependent measure of psychological difficulties. Therefore, the current research also used the total difficulties score of the parent-report SDQ as the indicator of participants' psychological difficulties.

All items are rated on a 3-point scale (from "0 = not true" to "2 = certainly true"). A total difficulty score can be obtained by summing up all response values of the items of emotional symptoms, conduct problems, hyperactivity/inattention, and peer relationship problems with positively worded items reverse scored (based on 20 items). A higher score indicates more psychological difficulties. Sample items included "rather solitary, tends to play alone" and "often lies or cheats." and "often unhappy, downhearted". The Cronbach's α of the total difficulties scale of mother-report SDQ was .82 (95% CI = [.78, .85]) for Chinese adolescents and .74 (95% CI = [.68, .78]) for Italian adolescents; and the Cronbach's α of the father-report total difficulties scale was .79 (95% CI = [.75, .83]) and .75 (95% CI = [.70, .80]) for Chinese and Italian adolescents, respectively.

Procedure

The current research was part of a large cross-cultural project collaborated

between Guangzhou University (China) and the University of Padua (Italy). This project was granted by the University of Padua and conducted in compliance with the ethical standards for research outlined in the Ethical Principles of Psychologists and Code of Conduct (American Psychological Association, 2010). We initially sought approvals from head masters of the collaborative secondary schools and then we obtained consent from parents and participants provided their assent before participating in the research. Voluntary participation was emphasized and no incentive reward was given. Regarding the administration procedure, with the help of head teachers adolescents were required to answer the self-report measures during regular class hours hosted by trained master students majoring in Psychology who were familiar with the measures and could provide clarification to whom had questions. After that, participants were requested to bring the parent-report SDQ measure with a pre-assigned number in a sealed envelope to their parents and asked them to fill it out separately at home. As soon as they finished answering the measure, they were instructed to seal the questionnaire back to the envelope and let their child bring it back to their head teacher and researcher collected the envelopes at the school. No identifiable personal information was collected to ensure confidentiality. The administration procedures were exactly the same in both samples.

Data analyses

SPSS 18.0 was used to analyze the data. Missing data were few (about 5%) in the present dataset and dealt with linear trend at point method in SPSS before analyses. A series of univariate (ANOVAs) analyses of variance were conducted to determine whether country and gender had a significant effect on main self-report and parent-report psychological difficulties. Effect sizes were measured using partial

eta-square (η^2_p), with the value of .01, .06, and .14 representing small, medium, and large effects, respectively (Cohen, 1988; 1992; Snyder & Lawson, 1993; Stevens, 1992). Finally, a mixed-design repeated measure was carried out to examine whether there would be difference in self-report and parent-report psychological difficulties, with nation and report-informant as between-subject and within-subject variables, respectively.

Results

Means and standard deviations of self-report, father-report, and mother-report psychological difficulties were displayed in Table 6.1.

According to Table 6.1, the levels of psychological difficulties reported by both Chinese and Italian adolescents and their parents were relatively mild. Specifically, these scores were less than one third of the range of the total score (i.e., 0 - 40).

Table 6.1 Descriptive statistics of psychological difficulties by cultures and gender

| | China | | | | | | Italy | | | | | |
|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|
| | Boys | | Girls | | Total | | Boys | | Girls | | Total | |
| | M | SD | M | SD | M | SD | M | SD | M | SD | M | SD |
| S-PD | 12.23 | 5.12 | 11.93 | 4.95 | 12.05 | 5.01 | 9.79 | 5.28 | 10.94 | 5.29 | 10.48 | 5.30 |
| F-PD | 9.23 | 5.45 | 9.00 | 4.92 | 9.09 | 5.13 | 7.80 | 4.29 | 7.92 | 4.95 | 7.87 | 4.69 |
| M-PD | 9.28 | 5.42 | 9.61 | 5.68 | 9.48 | 5.56 | 7.22 | 3.94 | 7.80 | 4.81 | 7.57 | 4.49 |

Note: S-PD = self-report psychological difficulties; F-PD = father-report psychological difficulties; M-PD = mother-report psychological difficulties.

The univariate analyses of variance were presented in Table 6.2. Regarding self-report psychological difficulties, the main effect of culture was significant ($F(1,433) = 11.60, p = .001, \eta^2_p = .026$), with Chinese adolescents reporting more psychological difficulties than their Italian counterparts; but the main effect of gender was not significant ($F(1,433) = .71, p = .399, \eta^2_p = .002$); and the interaction between culture and gender was not significant, either ($F(1,433) = 2.05, p = .153, \eta^2_p = .005$).

Regarding father-report psychological difficulties, the main effect of culture was significant ($F(1,433) = 6.80, p = .009, \eta^2_p = .015$), with Chinese fathers reporting their adolescent children had more psychological difficulties than Italian fathers; but neither the main effect of gender ($F(1,433) = .02, p = .904, \eta^2_p = .000$) nor their interaction was significant, either ($F(1,433) = .12, p = .725, \eta^2_p = .005$).

With respect to mother-report psychological difficulties, there was a significant main effect for culture ($F(1,433) = 15.38, p < .001, \eta^2_p = .034$), with Chinese mothers reporting their adolescent children had more psychological difficulties than Italian mothers; but the main effect of gender was not significant ($F(1,433) = .84, p = .358, \eta^2_p = .002$), and the interaction between culture and gender was not significant, either ($F(1,433) = .07, p = .795, \eta^2_p = .000$).

Table 6.2 ANOVAs of self-report and parent-report psychological difficulties

| | Culture | | | Gender | | | Culture * Gender | | |
|------|------------|--------|------------|------------|------|------------|------------------|------|------------|
| | $F(1,433)$ | p | η^2_p | $F(1,433)$ | p | η^2_p | $F(1,433)$ | p | η^2_p |
| S-PD | 11.60 | .001 | .026 | .71 | .399 | .002 | 2.05 | .153 | .005 |
| F-PD | 6.80 | .009 | .015 | .02 | .904 | .000 | .12 | .725 | .000 |
| M-PD | 15.38 | < .001 | .034 | .84 | .358 | .002 | .07 | .795 | .000 |

Note: S-PD = self-report psychological difficulties; F-PD = father-report psychological difficulties; M-PD = mother-report psychological difficulties.

Moreover, I also tested whether there was difference in the levels of self-report and parent-report psychological difficulties. A 2 (country: China vs. Italy) *3 (informant: self-report, vs. father-report vs. mother-report) mixed-design repeated measure analysis was conducted, with nation and report-informant as between-subject and within-subject variables, respectively. The results of multivariate tests showed that the main effect of report-informant was significant, Wilk's $\lambda = .794$, $F(2, 434) = 56.23$, $p < .001$, $\eta^2_p = .206$. However, the interaction between nation and report-informant was not significant, Wilk's $\lambda = .993$, $F(2, 434) = 1.460$, $p = .233$, $\eta^2_p = .007$. Given the significance of the overall test, pairwise comparisons were performed. The results showed that self-report values were significantly higher than that of father-report (Mean difference I-J = 2.784, S.E. = .281, $p < .001$) and mother-report (Mean difference I-J = 2.742, S.E. = .277, $p < .001$). However, father-report psychological difficulties was not significantly different from that of mother-report (Mean difference I-J = -.043, S.E. = .202, $p = 1.000^1$). These findings suggested that self-report psychological difficulties were significantly higher than the ones reported by fathers and mothers.

Brief discussion

Using three report informants, the current results provided converging evidence that intercultural factor played a role in adolescents' psychological difficulties. Several aspects of these results deserve attention.

First, these findings mainly indicate that Chinese adolescents report more psychological difficulties than their Italian counterparts, which dovetails with

¹ I am aware that p value is not likely to be equal to 1.000 but this is the value from the SPSS output.

previous findings based on both self-report and parent-report that Chinese adolescents show more psychological difficulties than Italian adolescents (Delvecchio, Mabilia, Di Riso, Miconi, & Li, 2015; Li, Delvecchio, Di Riso, Lis, & Salcuni, 2016; Li, Delvecchio, Di Riso, Nie, & Lis, 2016). The fact that Chinese adolescents show more psychological difficulties than Italian adolescents can be partly due to intensive social and academic pressure among Chinese adolescents (Delvecchio et al., 2014; Li et al., 2016). China has been undergoing rapid economic and societal development in the recent two decades. For the children who are born during the “one family one child” era, adolescents have to face extremely intensive academic stress and competition, which to some extent devastates Chinese adolescents’ mental health. One should note that higher level in Chinese adolescents’ psychological difficulties does not necessarily reflect that there is prevalence in disorder as stressed by previous research (Goodman et al., 2012).

Second, our findings fail to reveal a gender difference in psychological difficulties. These results are in line with some studies (Du et al., 2008; Li et al., 2016; Zhang, Ling, Xiao, Yang, Yang, & Yao, 2009). Nevertheless, one should interpret these findings with cautions. The ages of the current sample ranged from 14 to 17. This indicates that the current findings should not be generalized to other age band because gender difference in the total difficulties score has been found in other age range (e.g., Tobia, Gabriele, & Marzocchi, 2011).

An interesting result is that adolescents reported more psychological difficulties than their parents in both countries. This may be due to several reasons. First, overt psychological difficulties are more easily perceived by others (e.g., parents) than covert psychological difficulties, suggesting that that some psychological difficulties are not easily perceived by parents and thus they are not reported. In the current study,

psychological difficulties contain emotional problems, peer problems, hyperactivity problems, and conduct problems. The first two types of problems are less perceivable by parents than by adolescents themselves. This may therefore lead to the fact that adolescents themselves report more psychological difficulties than their parents. Second, it could be also possible that adolescents are independent from parents and do not want their parents to notice their own problems. Last, the possibility that parents glorify their children by reporting fewer psychological difficulties due to various reasons cannot be excluded. Regardless of the aforesaid reasons, these findings imply that using self-report to assess psychological difficulties appears more suitable than parent-informant to reflect adolescents' psychological difficulties. Hence, in the subsequent empirical studies, self-report total difficulties score of the SDQ was used as the main indicator of psychological difficulties.

In sum, the findings of this study reveal that Chinese adolescents report and are reported to have more psychological difficulties than their Italian counterparts, indicating that there are intercultural variations in the levels of psychological difficulties in adolescents.

Chapter 7 Study 2

Background

Study 1 provided evidence that there were intercultural variations in the levels of self-report and parent-report psychological difficulties. In this chapter, I investigated the association between attachment to parents, trait self-control, and psychological difficulties and examined whether there were intercultural variations in the direct and indirect effects. This chapter was designed to understand the family-related (i.e., attachment to parents) and individual (i.e., self-control) protective roles in adolescents' psychological difficulties and the moderating role of intercultural factor.

Method

Participants

The data were part of a large scale cross-cultural study conducted between 2012 and 2013. A total of 1286 adolescents comprised the sample of this study. Of these, 645 Chinese adolescents (320 boys, 325 girls; age range: 14 - 17 years, $M_{\text{age}} = 15.50$ years, $SD = 1.12$) were recruited from Guangzhou, a well-developed city located in Southern China and 641 Italian adolescents (322 boys, 319 girls; age range: 14 - 17 years, $M_{\text{age}} = 15.50$ years, $SD = 1.11$) were recruited from Venetian region of Northern Italy. A small portion of participants indicated they were from single-parent family in both countries and these participants were excluded to balance the sample. Therefore, all participants included in this research were from two-parent families. Moreover, the current Chinese and Italian samples reported that they and their parents

were Chinese and Italian, respectively and Chinese and Italian were their mother languages, respectively.

Measures

Attachment to parents

The revised version of the Inventory of Parent and Peer Attachment (IPPA-R) was used to assess participants' attachment to parents. The original version of the IPPA developed by Armsden and Greenberg (1987) assesses attachment to parents as a whole. This scale was later modified by separately assessing attachment to mothers and fathers with parallel wordings, and it has been recommended to use the revised version (i.e., IPPA-R) instead of the original version whenever possible (Armsden & Greenberg, 1989).

The IPPA-R is designed to measure adolescents' perceptions of the positive and negative cognitive/affective dimension of relationships with their parents and friends. This scale includes 25 items assess three broad dimensions, namely degree of mutual trust (i.e., *Trust*), quality of communication (i.e., *Communication*), and extent of anger and alienation (i.e., *Alienation*) towards mother or father. All items are rated on a 5-point scale (from "1= almost never or never true" to "5 = almost always or always true"). The IPPA-R is scored by reverse-scoring the negatively worded items and then summing the response values in each section (e.g., mother and father), yielding a total attachment score for mother and another total attachment score for father. A higher score indicates more secure attachment to, or better quality attachment relationship with a certain attachment figure. Sample items of this scale are "my mother respects my feelings" (attachment to mother) / "my father respects my feelings" (attachment to father), "I feel angry with my mother" (attachment to mother, reverse-scored) / "I feel

angry with my father” (attachment to mother, reverse-scored), “I tell my mother about my problems and troubles” (attachment to mother) / “I tell my father about my problems and troubles” (attachment to father).

In the current research, Chinese and Italian adolescents answered the existing Chinese (Song, Thompson, & Ferrer, 2009) and Italian (Guarnieri, Ponti, & Tani, 2010; Pace, San Martini, & Zavattini, 2011) versions of the IPPA-R, respectively. Previous research has examined the psychometric properties of the IPPA-R in Chinese and Italian adolescents, finding that the factor structure of this measure is a good fit and invariant across Chinese and Italian adolescents and that the internal reliability (e.g., Cronbach’s α) is adequate in both samples (Li, Delvecchio, Miconi, Salcuni, & Di Riso, 2014). These findings indicate that the IPPA-R can be applicable both to Chinese and Italian adolescents. The Cronbach’s α of this scale was .90 (95% CI = [.87, .91]) for attachment to father and .89 (95% CI = [.88, .90]) for attachment to mother for Chinese adolescents, and .93 (95% CI = [.92, .94]) for attachment to father and .93 (95% CI = [.92, .94]) for attachment to mother for Italian adolescents.

Self-control

The self-restraint subscale of the Adolescents’ Self-Consciousness scale (ASC, Nie & Ding, 2009; Nie et al., 2014) was utilized to assess participants’ levels of trait self-control. This self-report measure is one of the nine subscales of the ASC which is particularly designed to assess different aspects of the self of adolescents aged 11 to 19 years. The self-restraint subscale assesses adolescents’ ability to control their thoughts/attention, emotions, and impulses. This subscale contains 11 items and all items are rated on a 5-point scale (from “1= not like me at all” to “5 = like me very much”). A total score can be obtained by aggregating all response values with

negatively worded items reverse scored. A higher score indicates better self-control ability. Sample items included “I fail in overcoming my bad habits even though I have tried many times” (reverse score), “I can control my emotion” and “It is very hard for me to concentrate on doing one thing” (reverse scored).

The ASC is developed in the Chinese context to assess Chinese adolescents’ different aspects of the self (Nie & Ding, 2009). In order to test whether the ASC is suitable to assess Italian adolescents’ self-consciousness, previous research has back translated and validated this instrument in a large sample of Italian community adolescents, finding that the factor structure of the ASC is good fit and the internal reliability of each subscale is acceptable (Cronbach’s $\alpha > .64$) in Italian sample (Delvecchio, Mabilia, Lis, Mazzeschi, Nie, & Li, 2014). A recent cross-cultural study has also revealed that the factor structure of the self-restraint subscale is invariant across Chinese and Italian adolescents and the psychometric properties of this subscale is adequate in both samples (Li, Delvecchio, Lis et al., 2015). These results suggest that the self-restraint subscale can be applicable both in Chinese and Italian adolescents. The Cronbach’s α of this scale was .72 (95% CI = [.68, .75]) for Chinese adolescents and .63 (95% CI = [.59, .67]) for Italian adolescents.

Psychological difficulties

The self-report Strength and Difficulties Questionnaire (SDQ, Goodman, 1997; Goodman et al., 1998) as used in Study 1 was used to assess adolescents’ psychological difficulties. The total difficulties score served as the indicator, with a higher score indicating more psychological difficulties. In the current study, the Cronbach’s α of the total difficulties scale was .76 (95% CI = [.73, .79]) for Chinese adolescents and .78 (95% CI = [.76, .81]) for Italian adolescents.

Procedure

The current research was part of a large cross-cultural project, a collaboration between Guangzhou University (China) and the University of Padua (Italy). This project was granted by the University of Padua was conducted in compliance with the ethical standards for research outlined in the Ethical Principles of Psychologists and Code of Conduct (American Psychological Association, 2010). Participants answered a battery of questionnaires during regular class hours at two time points with a one-month interval. In the current research, attachment to parents and trait self-control were assessed at the first time point and dependent variables (i.e., psychological difficulties) were measured at the second time point. The administration procedures were exactly the same in both samples.

Data analyses

SPSS 18.0 and Mplus 7.0 were used to analyze the data. Missing data were few in the present dataset and dealt with linear trend at point method in SPSS before analyses. Several analyses were carried out. First, Pearson correlations were computed separately for Chinese and Italian sample to capture the relations between attachment to parents, trait self-control, and psychological difficulties. According to Cohen's (1992) standard, value of correlation coefficient of .10, .30, and .50 represents low, medium, and high effect sizes, respectively. Second, a multi-group path analysis was carried out to examine the direct effects of attachment to parents on psychological difficulties and the indirect effects through trait self-control, and to compare the differences in these effects. A bootstrapping technique was used. Five thousand bootstrap samples were drawn from the whole dataset and the 95% confidence interval (95% CI) was employed to judge whether trait self-control served as

mediators between attachment to parents and psychological difficulties. Significant mediation was identified if the 95% CI excluded zero. The direct and indirect effects were compared directly rather than based on the differences in the model fit of the nested model.

Examination of the differences in the model fit of the nested model is a traditional method to compare the difference between the two models. The differences in fit index such as ΔCFI are usually used to determine whether two models differ from each other significantly. However, such method, especially the criteria used to determine the difference are arbitrary and are usually used for descriptive rather than for inferential purposes (Cheung & Lau, 2012; Fan & Sivo, 2009, pp. 68-69). In a recent research (Lau & Cheung, 2012), a direct comparison approach has been proposed. Although this approach is originally proposed for latent variable model, it is also suitable for comparing direct and indirect effects for path model given that the inner logics are similar. Hence, all direct and indirect paths were compared following Lau and Cheung's (2012) procedures. A bootstrap technique and the 95% confidence interval were used to determine the differences in the direct and indirect paths. If the p value was significant and the 95% confidence interval did not include 0, then the difference was determined to be significant. In the current model, five direct paths (i.e., two paths from attachment to parents to psychological difficulties, two paths from attachment to parents to self-control, one path from self-control to psychological difficulties and two indirect paths (i.e., "attachment to father \rightarrow self-control \rightarrow psychological difficulties" and "attachment to mother \rightarrow self-control \rightarrow psychological difficulties") were compared.

Results

Descriptive statistics and correlations of main variables

Means, standard deviations, and correlations of attachment to parents, trait self-control, and psychological difficulties for Chinese and Italian adolescents were displayed in Table 7.1 and 7.2, respectively.

Table 7.1 Descriptive statistics and correlations of Chinese adolescent sample

| | M | SD | 1 | 2 | 3 | 5 |
|------------------------------|-------|-------|---------|---------|---------|---|
| 1 attachment to father | 82.74 | 15.39 | - | | | |
| 2 attachment to mother | 86.09 | 14.27 | .46*** | - | | |
| 3 trait self-control | 34.23 | 5.98 | .21*** | .23*** | - | |
| 4 psychological difficulties | 14.16 | 5.22 | -.18*** | -.23*** | -.52*** | - |

Note: *** $p < .001$.

Table 7.2 Descriptive statistics and correlations of Italian adolescent sample

| | M | SD | 1 | 2 | 3 | 4 |
|------------------------------|-------|-------|---------|---------|---------|---|
| 1 attachment to father | 85.25 | 15.87 | - | | | |
| 2 attachment to mother | 93.81 | 15.05 | .45*** | - | | |
| 3 trait self-control | 35.55 | 5.95 | .20*** | .24*** | - | |
| 4 psychological difficulties | 11.66 | 5.62 | -.31*** | -.34*** | -.47*** | - |

Note: *** $p < .001$.

As shown in Table 7.1, regarding Chinese adolescents, all correlation coefficients were significant ($p < .001$). Specifically, both attachment to father and attachment to mother were negatively related to psychological difficulties and the effect sizes were low. High trait self-control was associated with fewer psychological difficulties with high effect size. Attachment to father and attachment to mother were positively related

to trait self-control, and the effect sizes were low.

Pertaining to Italian adolescents, all correlation coefficients were significant ($p < .001$). To be more specific, both attachment to father and attachment to mother were negatively related to psychological difficulties, and the effect sizes were medium. Trait self-control was negatively associated with psychological difficulties, with medium effect size. Attachment to father and attachment to mother were positively related to trait self-control, and the effect sizes were small.

Collectively, attachment to parents, trait self-control, and psychological difficulties were significantly correlated both in Chinese and Italian adolescents with few differences in effect sizes.

Examination and comparison of direct and indirect effects

A multi-group path analysis was carried out to examine the direct and indirect effect, namely via trait self-control, of attachment to parents on psychological difficulties. The path models for the Chinese and Italian sample were presented in Figure 7.1 and 7.2, respectively; and the direct and indirect effects and their comparison were displayed in Table 7.3 and 7.4, respectively.

Results of Chinese adolescents

Regarding the Chinese sample, 28.5% variance of psychological difficulties was explained. Attachment to mother was negatively related to psychological difficulties ($B = -.036$, $S.E. = .014$, $B/S.E. = -2.588$, $p = .010$), whereas attachment to father was not ($B = -.011$, $S.E. = .014$, $B/S.E. = -.784$, $p = .433$). Trait self-control was negatively associated with psychological difficulties ($B = -.430$, $S.E. = .031$, $B/S.E. = -13.802$, $p < .001$). More importantly, trait self-control was found to mediate the association

between attachment to father and psychological difficulties ($B = -.023$, $S.E. = .008$, $B/S.E. = -2.892$, $p = .004$, $95\% CI = [-.038, -.007]$) and the one between attachment to mother and psychological difficulties ($B = -.029$, $S.E. = .009$, $B/S.E. = -3.432$, $p = .001$, $95\% CI = [-.046, -.013]$).

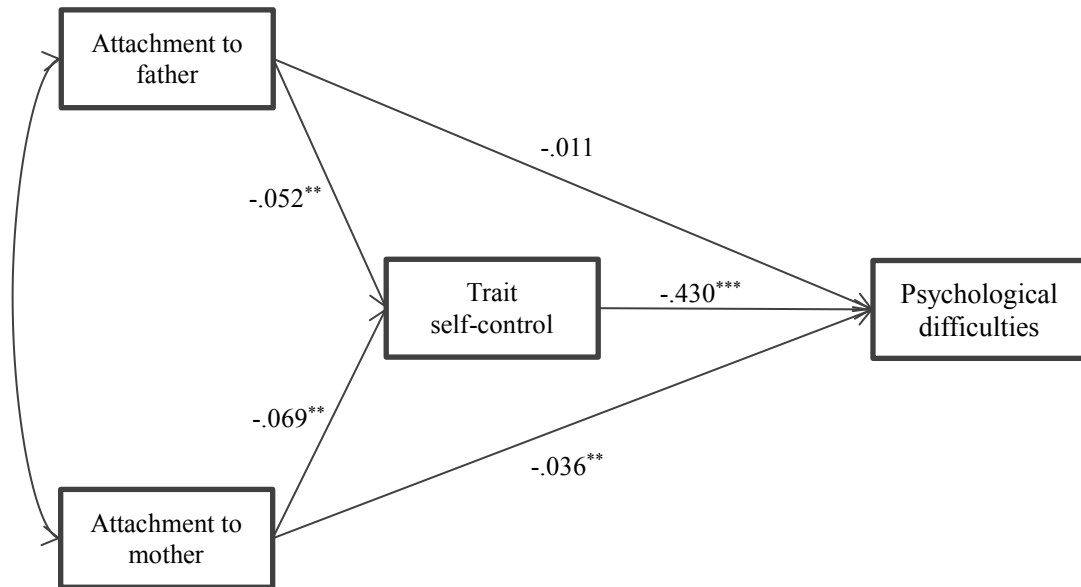


Figure 7.1 Path model of attachment to parents, trait self-control and psychological difficulties among Chinese adolescents; Note: values are unstandardized; ** $p < .01$, *** $p < .001$

Results of Italian adolescents

With respect to the Italian sample, the model accounted for 28.9% variance of psychological difficulties. Both attachment to father ($B = -.053$, $S.E. = .013$, $B/S.E. = -4.145$, $p < .001$) and attachment to mother ($B = -.065$, $S.E. = .015$, $B/S.E. = -4.305$, $p < .001$) were negatively related to psychological difficulties. Trait self-control was also negatively linked with psychological difficulties ($B = -.373$, $S.E. = .033$, $B/S.E. = -11.423$, $p < .001$). More importantly, trait self-control significantly mediated the direct effect of attachment to father on psychological difficulties ($B = -.016$, $S.E. = .006$, $B/S.E. = -2.640$, $p = .008$, $95\% CI = [-.029, -.004]$) and the one of attachment

to mother on psychological difficulties ($B = -.028$, $S.E. = .007$, $B/S.E. = -4.006$, $p < .001$, $95\% \text{ CI} = [-.041, -.014]$).

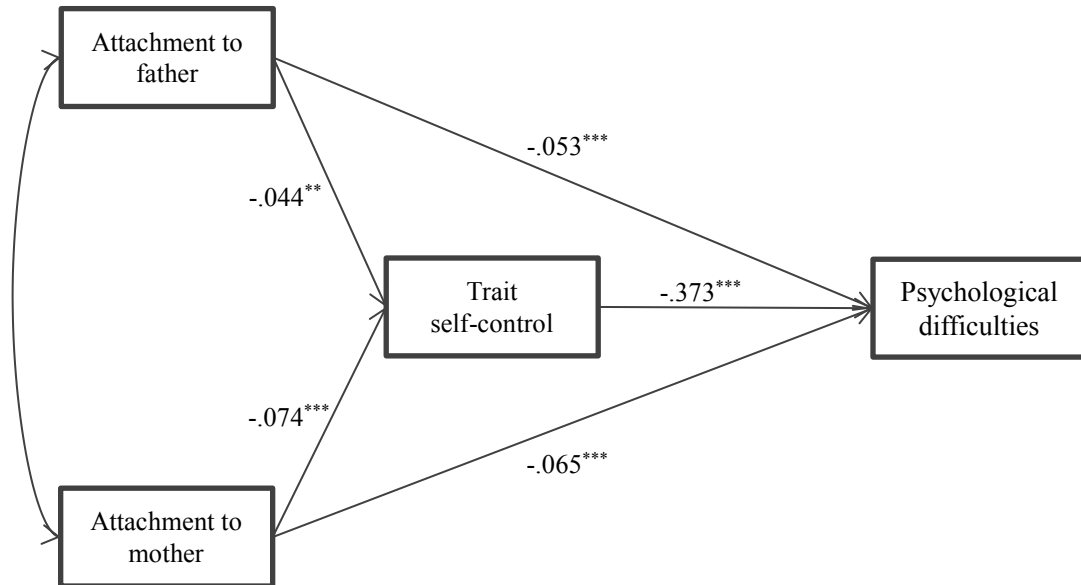


Figure 7.2 Path model of attachment to parents, trait self-control and psychological difficulties among Italian adolescents; Note: values are unstandardized; ** $p < .01$, *** $p < .001$

Comparison of direct effects

Subsequently, the direct and indirect effects were compared. As shown in Table 7.3, the results suggested that only the direct effect of attachment to father on psychological difficulties was significantly different across cultures, with this effect being stronger among Italian sample ($B = -.053$, $S.E. = .013$, $p < .001$) than among Chinese sample ($B = -.011$, $S.E. = .014$, $p = .433$), $B_{diff} = .042$, $S.E. = .019$, $p = .024$, $95\% \text{ CI} = [.006, .078]$.

Comparison of indirect effects

Comparison of indirect effect was also performed and the results are presented in Table 7.4. However, no significant difference in indirect effect was found, as p values

were larger than .05 and the 95% CI included zero.

Table 7.3 Comparison of the direct effects of attachment to parents on psychological difficulties

| | China | | | Italy | | | Difference _{China-Italy} | | | |
|----------|-------|------|-------|-------|------|-------|-----------------------------------|-------------|-------------|---------------------|
| | B | S.E. | p | B | S.E. | p | B | S.E. | p | 95% CI |
| AF → PD | -.011 | .014 | .433 | -.053 | .013 | <.001 | .042 | .019 | .024 | [.006, .078] |
| AM → PD | -.036 | .014 | .010 | -.065 | .015 | <.001 | .029 | .021 | .166 | [-.012, .070] |
| TSC → PD | -.430 | .031 | <.001 | -.373 | .033 | <.001 | -.057 | .045 | .207 | [-.146, .032] |
| AF → TSC | .052 | .018 | .003 | .044 | .016 | .006 | .008 | .024 | .726 | [-.038, .055] |
| AM → TSC | .069 | .020 | .001 | .074 | .017 | <.001 | -.005 | .026 | .835 | [-.056, .045] |

Note: AF = attachment to father; AM = attachment to mother; TSC = trait self-control; PD = psychological difficulties. Bold fonts indicate significant difference between the two samples.

Table 7.4 Comparison of the indirect effects of attachment to parents on psychological difficulties

| | China | | | | Italy | | | | Difference _{China-Italy} | | | |
|---------------|-------|------|----------|----------------|-------|------|----------|----------------|-----------------------------------|------|----------|---------------|
| | B | S.E. | <i>p</i> | 95% CI | B | S.E. | <i>p</i> | 95% CI | B | S.E. | <i>p</i> | 95% CI |
| AF → TSC → PD | -.023 | .008 | .004 | [-.038, -.007] | -.016 | .006 | .008 | [-.029, -.004] | -.006 | .010 | .539 | [-.026, .013] |
| AM → TSC → PD | -.029 | .009 | .001 | [-.046, -.013] | -.028 | .007 | < .001 | [-.041, -.014] | -.002 | .011 | .860 | [-.023, .019] |

Note: AF = attachment to father; AM = attachment to mother; TSC = trait self-control; PD = psychological difficulties.

Brief discussion

In this chapter, the association between attachment to parents, trait self-control, and psychological difficulties were examined. Furthermore, the intercultural variations in the direct and indirect effects were also tested.

The results showed that: (1) secure attachment to parents were positively related to self-control in both Chinese and Italian adolescents; (2) secure attachment to mother was negatively related to psychological difficulties in both Chinese and Italian adolescents; whereas secure attachment to father was negatively linked with psychological difficulties for Italian but not for Chinese adolescents; (3) trait self-control was negatively associated with psychological difficulties in both samples; (4) trait self-control significantly mediated the relation between attachment to parents and psychological difficulties in both samples; and (5) only the direct effect of attachment to father on psychological difficulties differed between Chinese and Italian adolescents, with such effect being significant for Italian but not for Chinese adolescents.

These findings provide crucial converging evidence that attachment to parents and trait self-control are important in mitigating adolescents' psychological difficulties both for Chinese and Italian adolescents, which are consistent with previous studies (e.g., Cai et al., 2013; Delvecchio et al., 2013; Li, Delvecchio, Lis, et al., 2015; Situ et al., 2016; Tambelli et al., 2012). Although the direct effect of attachment to father on psychological difficulties is not significant among Chinese adolescents in the current sample, this by no means suggests that attachment to father is not important in the Chinese context. In contrast, attachment to father is also paramount in this group because attachment to father may operate in an indirect way,

namely through self-control, to link with psychological difficulties.

Regarding the intercultural variations in these relationships, the current findings suggest that the direct effect of attachment to parents and the indirect effect, namely through high level of trait self-control, on psychological difficulties are by large invariant both in Chinese and Italian adolescents, which is consistent with a prior research which also reveals trait self-control mediates the association between attachment to parents and depressive symptoms in both Chinese and Italian adolescents (Li, Delvecchio, Lis, et al., 2015).

Taken together, the current findings suggest that both attachment to parents and trait self-control are crucial protective factor of psychological difficulties both for Chinese and Italian adolescents. Trait self-control serves as a mediator in the association between attachment to parents and psychological difficulties. The influence of intercultural factor on the direct and indirect effects is limited.

Chapter 8 Study 3

Background

So far, the mean level differences in self-report and parent-report psychological difficulties and the protective factors (i.e., attachment to parents and trait self-control) have been examined in Study 1 and 2, respectively. The current research aimed to extend Study 2 in several aspects.

First, in Study 2, only self-report measures were utilized, which may cause common shared variance. In the current study, a behavioral measure of self-control (i.e., the Stroop task) was also added to further examine whether such measure could also have an effect on adolescents' psychological difficulties. The Stroop task was developed by Stroop (1935) and has been widely used in assessing one's self-control ability (e.g., Friese, Binder, Luechinger, Boesiger, & Rasch, 2013; for a review, see Duckworth & Kern, 2011).

Second, the term "culture" investigated in Study 1 and 2 is intercultural factor, or also known as national-level cultural variable. Our previous findings suggest that it influences the levels of psychological difficulties but its influence on the direct and indirect effects of attachment to father on psychological difficulties is mild. As mentioned in the literature review section, cultural effect can be understood as both intercultural and intracultural influences. However, little is known about whether intracultural factor also plays a role in the association between attachment to parents, self-control, and psychological difficulties as well as whether the role of intracultural factor would be dependent on intercultural variable. Thus, in the current research the role of both intercultural and intracultural effects were simultaneously examined.

More specifically, an intracultural variable (i.e., individualism-collectivism) was added as an antecedent of one's attachment to parents and self-control in the model, as a number of previous studies have found that individuals' cultural orientation may serve as a predictor of one's interpersonal relationship, the self, and parenting behavior which is essential in the development of attachment (Agishtein & Brumbaugh, 2013; Harkness & Super, 2002; Kemmelmeier et al., 2003; Markus & Kitayama, 1991; Ruby & Grusec, 2001; Triandis, Bontempo, Villareal, Asai, & Lucca, 1988). Intracultural factor is likely to associate with adolescents' psychological difficulties through attachment to parents and self-control. The current study aimed to address this issue.

Another explorative issue was to examine whether the overall model of "intracultural factor → attachment to parents → self-control → psychological difficulties" would be moderated by intercultural variable.

The findings of this study would provide converging evidence for Study 2 and deepen our understandings regarding the role of intracultural and intercultural variables in the association between attachment to parents, self-control, and psychological difficulties among adolescents.

Method

Participants

The data of the present research were from the data bank of a large scale cross-cultural study conducted between 2015 and 2016. A total of 750 adolescents comprised the sample of this study. Of these, 376 Chinese adolescents (157 boys, 208 girls, 11 missing; age range: 14 - 17 years, $M_{\text{age}} = 15.46$ years, $SD = 1.02$) were

recruited from Guangzhou, a well-developed city located in Southern China and 374 Italian adolescents (190 boys, 184 girls; age range: 14 - 17 years, $M_{age} = 15.50$ years, $SD = 1.02$) were recruited from Venetian region of Northern Italy. Over a half of Chinese participants (66.5%) indicated they were the only child in the family whereas only a small proportion of Italian participants (16.0%) reported no siblings. A small portion of participants indicated they were from single-parent family in both countries and they were excluded in order to balance the sample. Moreover, the current Chinese and Italian samples indicated that they and their parents were Chinese and Italian of their respective countries, with Chinese and Italian as their native language, respectively.

Measures

Individualism-collectivism

The Horizontal and Vertical Individualism and Collectivism Scale (Triandis & Gelfand, 1988) was used to assess participants' orientation of individualism and collectivism. This measure was designed to assess four psychological cultural dimensions, namely horizontal individualism, horizontal collectivism, vertical individualism, and vertical collectivism. Chinese adolescents answered the existing Chinese version of the scale (Li et al., 2010), whereas Italian adolescents answered the Italian version which was translated into Italian following a back-translation procedure (van de Vijver & Hambleton, 1996).

This measure consists of 16 items rated on a nine-point Likert scale ("1 = absolutely disagree" to "9 = absolutely agree"), with four items loading on each of the four constructs. As there are a small number of items in each dimension, this may probably lead to low reliability of each dimension. To address this issue, I combined

the two dimensions of individualism (i.e., horizontal and vertical individualism) into one single dimension “individualism” and the two dimensions of collectivism (i.e., horizontal and vertical individualism) into one single dimension “collectivism” as previous research did (e.g., Li et al., 2010). The scores of individualism and collectivism served as the indicators of intracultural factor.

Sample items of this scale are “I’d rather depend on myself than others”, “To me, pleasure is spending time with others”, and “It is my duty to take care of my family, even when I have to sacrifice what I want.” The Cronbach’s α of this scale was .71 (95% CI = [.66, .75]) for individualism and .82 (95% CI = [.79, .84]) for collectivism for Chinese adolescents, and .72 (95% CI = [.67, .76]) for individualism and .74 (95% CI = [.69, .77]) for collectivism for Italian adolescents.

Attachment to parents

The revised version of the Inventory of Parent and Peer Attachment (IPPA-R) was used to assess participants’ attachment to parents. This measure was exactly the same as the one used in Study 2 (see Study 2 for detailed description of this scale). The total scores of attachment to father and attachment to mother served as indicators of attachment to parents. The Cronbach’s α of this scale was .92 (95% CI = [.91, .94]) for attachment to father and .91 (95% CI = [.90, .92]) for attachment to mother for Chinese adolescents, and .93 (95% CI = [.92, .94]) for attachment to father and .93 (95% CI = [.92, .94]) for attachment to mother for Italian adolescents.

Self-control

In the current study, both self-report and behavioral measures were employed to assess adolescents’ self-control ability.

Trait self-control

The same self-control measure (Nie et al., 2009; 2014) as used in Study 2 (see Study 2 for detailed description of this scale) was employed to assess adolescents' trait self-control. The Cronbach's α of this scale was .72 (95% CI = [.67, .76]) for Chinese adolescents and .64 (95% CI = [.58, .69]) for Italian adolescents.

Behavioral self-control

A computer-based Stroop task developed with E-Prime 2.0 was utilized to assess adolescents' self-control performance. The Stroop task (Stroop, 1935) is a measure that assess individuals' inhibitory (e.g., anti-interference) ability. A number of studies have used this task as a behavioral measure to assess individuals' self-control ability (Friese et al., 2013; Friese & Wänke, 2014; Job, Walton, Bernecker, & Dweck, 2013; for a review, see Duckworth & Kern, 2011). The rationale of this task is that one needs to inhibit the influence of meaning of the presented word while they are responding to the color of the word and this process requires one to exert self-control.

In this study, there were 40 congruent trials, 40 incongruent trials, and 40 neutral trials (a rectangle). The presented content (i.e., a word or a rectangle) disappeared after participants responded and there was a 500ms "+" between each trial. In each trial, one of the three words (i.e., "red", "green", and "blue") or a rectangle was presented in the computer screen in one of the three inks (i.e., "red", "green", and "blue"). In this case, the meaning of the presented word and the ink could be either congruent (e.g., the word "red" in the "red" ink) or incongruent (e.g., the word "red" in the "green" ink). Participants were required to respond to the color of the word by pressing corresponding buttons (i.e., "Z" for red, "X" for green, and "C" for blue) on the QWERT keyboard as fast and accurately as possible. Illustration of the Stroop test

and the procedure of each trial are presented in Figure 8.1 and 8.2.

Following previous studies (Friese et al., 2013; Friese & Wänke, 2014), the difference in the error rate of the incongruent trials and the congruent trials (i.e., error rate of incongruent trials – error rate of congruent trials) served as the indicator of behavioral self-control, and a larger value indicated poorer behavioral self-control².



Figure 8.1 Illustration of the Stroop test

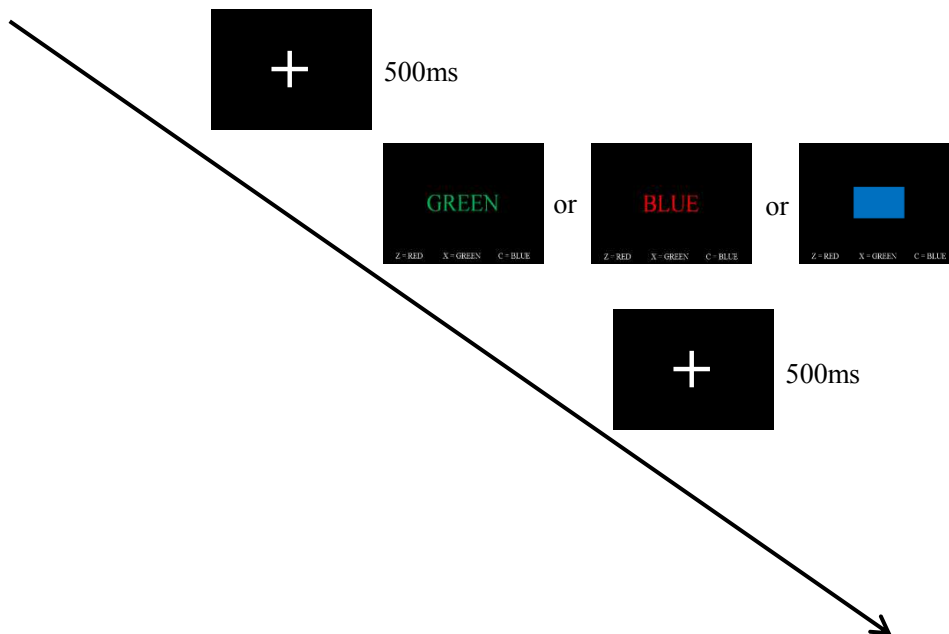


Figure 8.2 Illustration of the procedure of each trial of the computer-based Stroop task

² The error rate of the incongruent trials is considered to be larger than that of the congruent trials. A higher value of this suggests participants have more difficulties overriding dominant response.

Psychological difficulties

The same self-report SDQ (Goodman, 1997; Goodman et al., 1998) as used in Study 1 was utilized to assess adolescents' psychological difficulties (see Study 1 for detailed description of this measure). The current research adopted the total difficulties score of the self-report SDQ as the indicator of participants' psychological difficulties. The Cronbach's α of the total difficulties scale was .74 (95% CI = [.70, .78]) for Chinese adolescents and .79 (95% CI = [.76, .82]) for Italian adolescents.

Procedure

The current research was part of a large cross-cultural project between Guangzhou University (China) and the University of Padua (Italy) conducted in 2015-2016. This project was conducted in compliance with the ethical standards for research outlined in the Ethical Principles of Psychologists and Code of Conduct (American Psychological Association, 2010). Approvals from head masters of collaborative secondary schools were sought and then consent were obtained from parents and participants provided their assent before participating in the research. Voluntary participation was emphasized and no incentive reward was given. All measures were administered in two sections. In the first section, participants were required to finish the Stroop task on the computer. After that, they answered a booklet that contained a series of questionnaires. All measures were administered in regular class hours with the help of head teachers hosted by trained master students majoring in Psychology who were familiar with all the measures and could provide clarification to whom had questions. Participants were instructed to be open and honest in their responses and to refrain from sharing answers with each other. No identifiable

personal information was collected to ensure confidentiality. All materials were collected as soon as participants had finished. Participants were thanked at the end. The administration procedures were exactly the same in both samples.

Data analyses

SPSS 18.0 and Mplus 7.0 were used to analyze the data. First, a primary multivariate analysis of variance (MANOVA) was carried out to examine whether Chinese adolescents were more collectivistic and less individualistic than their Italian counterparts for research interest. Then analyses similar to those conducted in Study 2 were conducted. Specifically, Pearson correlations were computed and multi-group path analysis was completed to examine the association between individualism-collectivism, attachment to parents, trait and behavioral self-control, and psychological difficulties. Bootstrap technique was utilized and the 95% confidence interval was employed to determine the significance of mediation and the differences in the direct and indirect effects.

Results

Preliminary analysis

MANOVA was conducted to examine the difference in the score of the individualism-collectivism measure between Chinese and Italian adolescents. The results showed that Chinese adolescents ($M = 50.18$, $SD = 9.13$) did not report significantly more collectivism than Italian adolescents ($M = 49.91$, $SD = 8.63$), $F(1, 748) = .17$, $p = .684$, $\eta^2_p = .000$. Neither did Chinese adolescents ($M = 47.90$, $SD = 8.28$) reported significantly less individualism than their Italian counterparts ($M =$

48.39, SD = 9.18), $F(1, 748) = .60, p = .440, \eta_p^2 = .001$.

Descriptive statistics and correlations of main variables

Means, standard deviations, and correlations of individualism-collectivism, attachment to parents, trait and behavioral self-control, and psychological difficulties for Chinese and Italian adolescents were displayed in Table 8.1 and 8.2, respectively.

Table 8.1 Descriptive statistics and correlations among Chinese adolescents

| | M | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|------------------------------|-------|-------|--------|---------|---------|---------|---------|-----|---|
| 1 individualism | 47.90 | 8.23 | - | | | | | | |
| 2 collectivism | 50.18 | 9.13 | .25*** | - | | | | | |
| 3 attachment to father | 83.97 | 17.63 | -.09 | .13** | - | | | | |
| 4 attachment to mother | 88.12 | 15.73 | -.10 | .29*** | .43*** | - | | | |
| 5 trait self-control | 35.84 | 5.88 | -.14** | .03 | .31*** | .24*** | - | | |
| 6 behavioral self-control | .04 | .07 | .07 | -.02 | .03 | .04 | -.02 | - | |
| 7 psychological difficulties | 12.22 | 5.08 | .06 | -.21*** | -.31*** | -.36*** | -.51*** | .02 | - |

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

Regarding Chinese sample, individualism was not significant related to psychological difficulties, but collectivism was negatively related to psychological difficulties with small effect size. Both attachment to father and attachment to mother were negatively associated with psychological difficulties with medium effect sizes. High level of trait self-control was negatively related to psychological difficulties and the effect size was large. Behavioral self-control was not significantly related to psychological difficulties.

For Italian adolescents, individualism was negatively related to psychological difficulties with small effect size, whereas collectivism was negatively associated with

psychological difficulties with medium effect size. Both attachment to father and attachment to mother were negatively associated with psychological difficulties, and the effects sizes were small. Similar to Chinese sample, high trait self-control was negatively related to psychological difficulties and the effect size was close to large. There were no significant associations between behavioral self-control and psychological difficulties.

Table 8.2 Descriptive statistics and correlations among Italian adolescents

| | M | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|------------------------------|-------|-------|-------|---------|---------|---------|---------|------|---|
| 1 individualism | 48.39 | 9.18 | - | | | | | | |
| 2 collectivism | 49.91 | 8.63 | .17** | - | | | | | |
| 3 attachment to father | 88.34 | 17.07 | .04 | .23*** | - | | | | |
| 4 attachment to mother | 96.09 | 16.79 | .00 | .28*** | | - | | | |
| 5 trait self-control | 34.77 | 5.98 | -.05 | .08 | .20*** | .21*** | - | | |
| 6 behavioral self-control | .04 | .07 | -.07 | -.06 | -.06 | -.02 | .01 | - | |
| 7 psychological difficulties | 13.34 | 5.99 | -.12* | -.33*** | -.25*** | -.27*** | -.49*** | -.06 | - |

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

In sum, collectivism, attachment to parents and trait self-control were negatively related to psychological difficulties both in Chinese and Italian adolescents with a few differences in effect sizes and the correlation between individualism and psychological difficulties was only significant in Italian sample.

Examination and comparisons of the direct and indirect effects

A multi-group path analysis was carried out to examine and compare the direct and indirect effects of individualism-collectivism, attachment to parents, and trait and behavioral self-control on psychological difficulties. The path models of Chinese and

Italian samples are presented in Figure 8.3 and 8.4, respectively. All direct and indirect effects for both samples and the comparisons between them are displayed in Table 8.3 and 8.4.

Organization of the report of the findings

The organization of the report of the findings should be noted given the complexity of the results. Regarding the examination of the direct and indirect effects, results of Chinese and Italian samples were reported separately. Within each sample, the direct effects of intracultural factor (i.e., individualism-collectivism), attachment to parents, and trait as well as behavioral self-control on psychological difficulties were first reported. Then, indirect effects with only one mediator (i.e., either attachment to parents or self-control) were reported. Finally, chain indirect effects with both attachment to parents and self-control as mediators were reported. With respect to the comparison of the direct and indirect effects, the direct associations between the two variables were first compared. Then, indirect effects with only one mediator were compared. Finally, chain indirect effects with two mediators were compared.

Results of Chinese adolescents

Regarding the Chinese sample, a total of 56.6% variance of psychological difficulties was explained. The relation of individualism to psychological difficulties was not significant ($B = -.025$, $S.E. = .146$, $B/S.E. = -.174$, $p = .862$), whereas collectivism was negatively related to psychological difficulties ($B = -.131$, $S.E. = .060$, $B/S.E. = -2.198$, $p = .028$). Neither attachment to father ($B = -.037$, $S.E. = .024$, $B/S.E. = -1.540$, $p = .124$), nor attachment to mother ($B = -.046$, $S.E. = .026$, $B/S.E. =$

-1.745, $p = .081$) was not significantly related to psychological difficulties. Both trait self-control ($B = -.416$, $S.E. = .075$, $B/S.E. = -5.547$, $p < .001$) and behavioral self-control ($B = 37.995$, $S.E. = 11.392$, $B/S.E. = 3.335$, $p = .001$) was significantly related to psychological difficulties.

Importantly, several significant indirect paths were found. First, behavioral self-control was found to mediate the link of collectivism with psychological difficulties ($B = -.610$, $S.E. = .206$, $B/S.E. = -2.967$, $p = .003$, 95% CI = [-1.014, -.207]). Second, trait self-control significantly mediated the association between attachment to father and psychological difficulties ($B = -.037$, $S.E. = .011$, $B/S.E. = -3.529$, $p < .001$, 95% CI = [-.058, -.016]) and the one between attachment to mother and psychological difficulties ($B = -.022$, $S.E. = .011$, $B/S.E. = -2.045$, $p = .041$, 95% CI = [-.043, -.001]). Furthermore, behavioral self-control also significantly mediated the relation of attachment to father to psychological difficulties ($B = -.142$, $S.E. = .054$, $B/S.E. = -2.633$, $p = .008$, 95% CI = [-.248, -.036]).

Moreover, some chain indirect effects were also found, namely “collectivism → attachment to father → trait self-control → psychological difficulties” ($B = -.028$, $S.E. = .009$, $B/S.E. = -3.209$, $p = .001$, 95% CI = [-.045, -.011]), “collectivism → attachment to father → behavioral self-control → psychological difficulties” ($B = -.107$, $S.E. = .044$, $B/S.E. = -2.429$, $p = .015$, 95% CI = [-.193, -.021]), “collectivism → attachment to mother → trait self-control → psychological difficulties” ($B = -.018$, $S.E. = .009$, $B/S.E. = -2.019$, $p = .044$, 95% CI = [-.035, -.001]), “individualism → attachment to father → trait self-control → psychological difficulties” ($B = .015$, $S.E. = .007$, $B/S.E. = 2.265$, $p = .024$, 95% CI = [.002, .029]), and “individualism → attachment to father → behavioral self-control → psychological difficulties” ($B = .059$, $S.E. = .027$, $B/S.E. = 2.211$, $p = .027$, 95% CI = [.007, .112]).

Results of Italian adolescents

With respect to the Italian sample, individualism-collectivism, attachment to parents, and self-control together accounted for 42.1% variance of psychological difficulties. The association between individualism and psychological difficulties was not significant ($B = -.034$, $S.E. = .039$, $B/S.E. = -.871$, $p = .384$), whereas collectivism showed a significant link with psychological difficulties ($B = -.252$, $S.E. = .058$, $B/S.E. = -4.305$, $p < .001$). Attachment to father was not significantly related to psychological difficulties ($B = -.041$, $S.E. = .022$, $B/S.E. = -1.894$, $p = .058$) but attachment to mother was ($B = -.054$, $S.E. = .026$, $B/S.E. = -2.129$, $p = .033$). Trait self-control was significantly associated with psychological difficulties ($B = -.465$, $S.E. = .053$, $B/S.E. = -8.774$, $p < .001$) but behavioral self-control was not ($B = 30.209$, $S.E. = 23.713$, $B/S.E. = -1.274$, $p = .203$).

Several indirect effects were found significant. Specifically, trait self-control was found to mediate the association between attachment to father and psychological difficulties ($B = -.023$, $S.E. = .010$, $B/S.E. = -2.377$, $p = .017$, 95% CI = [-.041, -.004]) and the one between attachment to mother and psychological difficulties ($B = -.026$, $S.E. = .010$, $B/S.E. = -2.554$, $p = .011$, 95% CI = [-.045, -.006]).

Moreover, two significant chain indirect effects were found, namely “collectivism → attachment to father → trait self-control → psychological difficulties” ($B = -.012$, $S.E. = .006$, $B/S.E. = -2.065$, $p = .039$, 95% CI = [-.023, -.001]) and “collectivism → attachment to mother → trait self-control → psychological difficulties” ($B = -.016$, $S.E. = .007$, $B/S.E. = -2.303$, $p = .021$, 95% CI = [-.030, -.002]).

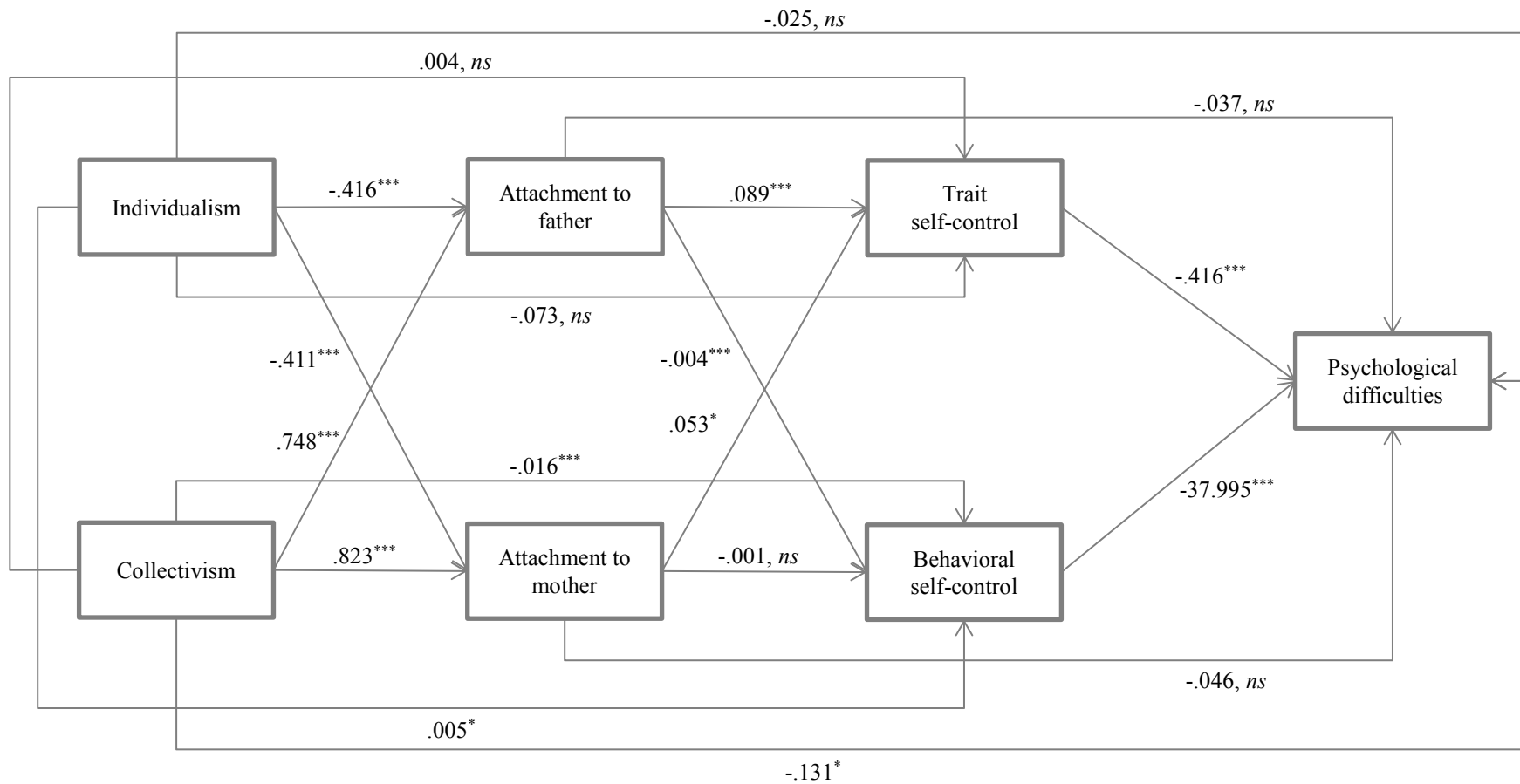


Figure 8.3 Path model of individualism-collectivism, attachment to parents, self-control, and psychological difficulties among Chinese adolescents

Note: values are unstandardized; for simplicity, correlations of independent variables and error terms are not shown; * $p < .05$, ** $p < .01$, *** $p < .001$

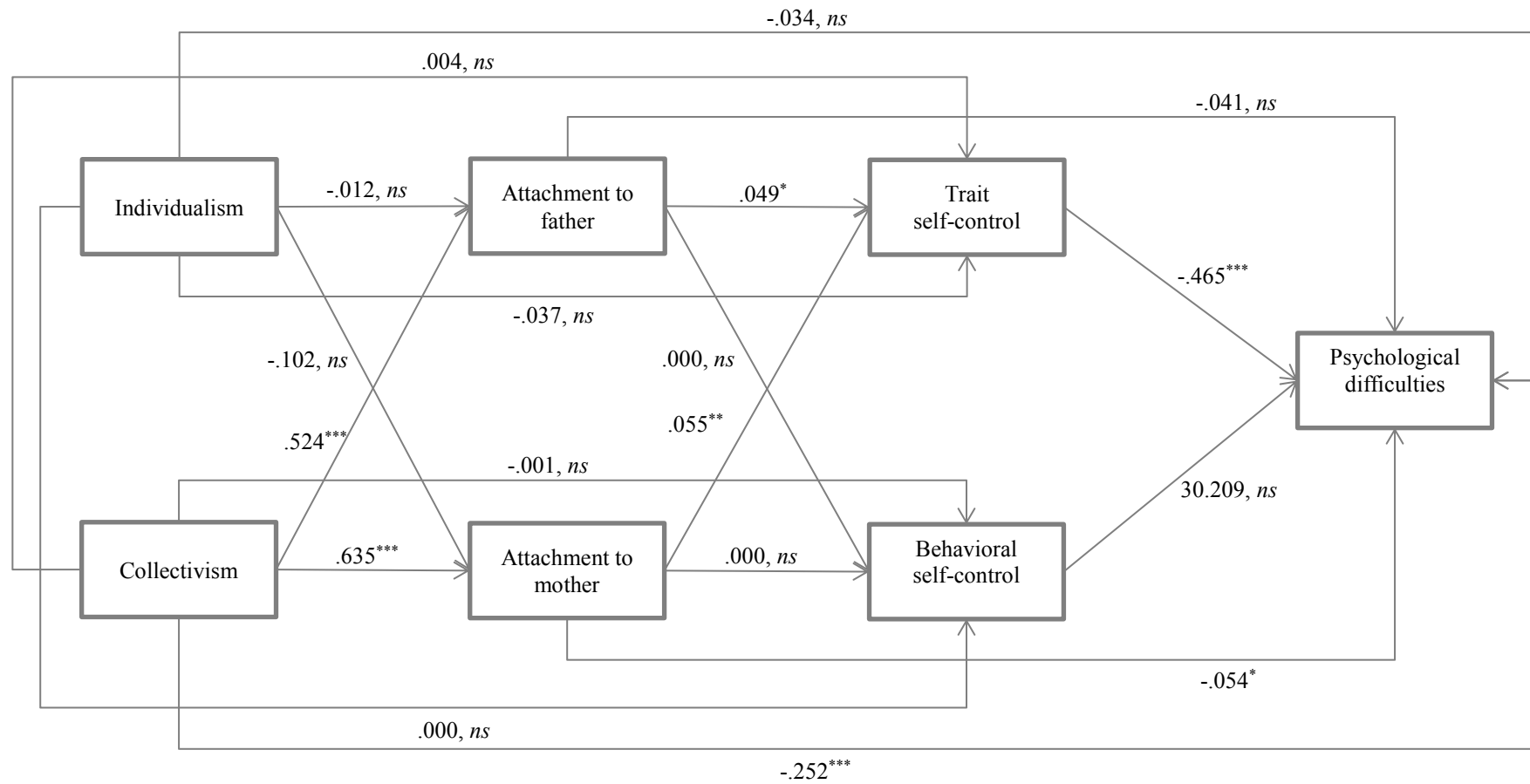


Figure 8.4 Path model of individualism-collectivism, attachment to parents, self-control, and psychological difficulties among Italian adolescents

Note: values are unstandardized; for simplicity, correlations of independent variables and error terms are not shown; * $p < .05$, ** $p < .01$, *** $p < .001$

Comparison of direct effects

Subsequently, the direct and indirect effects were compared directly using Bootstrap technique ($N = 5000$). As shown in Table 9.3, some direct effects were significantly different between Chinese and Italian adolescents.

To be more specific, the difference in the relation of individualism to behavioral self-control was significant, with this association being stronger in the Chinese sample ($B = .005$, $S.E. = .002$, $B/S.E. = 2.295$, $p = .022$) than that in the Italian sample ($B = .000$, $S.E. = .000$, $B/S.E. = -.317$, $p = .751$), $B_{diff} = .005$, $S.E. = .002$, $B/S.E. = 2.301$, $p = .021$, $95\% CI = [.001, .009]$. This was also the case for the association between collectivism and behavioral self-control, with this relation being stronger in the Chinese sample ($B = -.016$, $S.E. = .003$, $B/S.E. = -6.191$, $p < .001$) than that in the Italian sample ($B = -.001$, $S.E. = .001$, $B/S.E. = -1.422$, $p = .155$), $B_{diff} = -.015$, $S.E. = .003$, $B/S.E. = -5.223$, $p < .001$, $95\% CI = [-.020, -.009]$. Furthermore, the association between attachment to father and behavioral self-control was also stronger in the Chinese sample ($B = -.004$, $S.E. = .001$, $B/S.E. = -4.228$, $p < .001$) than that in the Italian sample ($B = .000$, $S.E. = .000$, $B/S.E. = -1.441$, $p = .150$), $B_{diff} = -.003$, $S.E. = .001$, $B/S.E. = -3.509$, $p < .001$, $95\% CI = [-.005, -.001]$. In addition, the relation between individualism and attachment to father was stronger in the Chinese sample ($B = -.416$, $S.E. = .120$, $B/S.E. = -3.464$, $p = .001$) than that in the Italian sample ($B = -.012$, $S.E. = .092$, $B/S.E. = -.130$, $p = .897$), $B_{diff} = -.404$, $S.E. = .155$, $B/S.E. = -2.605$, $p = .009$, $95\% CI = [-.708, -.100]$. This was also the case for the relationship between individualism and attachment to mother (Chinese sample: $B = -.411$, $S.E. = .099$, $B/S.E. = -4.167$, $p < .001$; Italian sample: $B = -.102$, $S.E. = .103$, $B/S.E. = -.988$, $p = .323$; $B_{diff} = -.309$, $S.E. = .143$, $B/S.E. = -2.164$, $p = .030$, $95\% CI = [-.590, -.029]$).

Comparison of indirect effects

As shown in Table 9.4, some indirect effects also significantly differed between the Chinese and the Italian samples. Specifically, the indirect effect “collectivism → behavioral self-control → psychological difficulties” was significantly larger in the Chinese sample ($B = -.610$, $S.E. = .206$, $B/S.E. = -2.967$, $p = .003$, $95\% CI = [-1.014, -.207]$) than that in the Italian sample ($B = -.045$, $S.E. = .060$, $B/S.E. = -.743$, $p = .458$, $95\% CI = [-.163, .073]$), $B_{diff} = -.566$, $S.E. = .215$, $B/S.E. = -2.630$, $p = .009$, $95\% CI = [-.987, -.144]$. The indirect effect “attachment to father → behavioral self-control → psychological difficulties” was also significantly larger in the Chinese sample ($B = -.142$, $S.E. = .054$, $B/S.E. = -2.633$, $p = .008$, $95\% CI = [-.248, -.036]$) than that in the Italian sample ($B = -.014$, $S.E. = .018$, $B/S.E. = -.778$, $p = .436$, $95\% CI = [-.050, .021]$), $B_{diff} = -.128$, $S.E. = .057$, $B/S.E. = -2.249$, $p = .025$, $95\% CI = [-.240, -.016]$.

Three chain indirect effects were found significantly different, with all of them being larger in the Chinese than in the Italian sample, namely “collectivism → attachment to father → behavioral self-control → psychological difficulties” (Chinese sample: $B = -.107$, $S.E. = .044$, $B/S.E. = -2.429$, $p = .015$, $95\% CI = [-.193, -.021]$; Italian sample: $B = -.007$, $S.E. = .011$, $B/S.E. = -.656$, $p = .512$, $95\% CI = [-.030, .015]$; $B_{diff} = -.099$, $S.E. = .045$, $B/S.E. = -2.193$, $p = .028$, $95\% CI = [-.188, -.011]$), “individualism → attachment to father → trait self-control → psychological difficulties” (Chinese sample: $B = .015$, $S.E. = .007$, $B/S.E. = 2.265$, $p = .024$, $95\% CI = [.002, .029]$; Italian sample: $B = .000$, $S.E. = .002$, $B/S.E. = .120$, $p = .905$, $95\% CI = [-.004, .005]$; $B_{diff} = .015$, $S.E. = .007$, $B/S.E. = 2.094$, $p = .036$, $95\% CI = [.001, .029]$), and “individualism → attachment to father → behavioral self-control → psychological difficulties” (Chinese sample: $B = .059$, $S.E. = .027$, $B/S.E. = 2.211$, p

= .027, 95% CI = [.007, .112]; Italian sample: B = .000, S.E. = .002, B/S.E. = .074, p
= .941, 95% CI = [-.004, .005]; $B_{\text{diff}} = .059$, S.E. = .027, B/S.E. = 2.194, $p = .028$, 95%
CI = [.006, .112]).

Table 8.3 Comparison of the unstandardized direct effects between Chinese and Italian adolescents

| | China | | | Italy | | | Difference ^{China-Italy} | | | |
|-----------|--------|--------|----------|--------|--------|----------|-----------------------------------|-------------|------------------|-----------------------|
| | B | S.E. | <i>p</i> | B | S.E. | <i>p</i> | B | S.E. | <i>p</i> | 95% CI |
| INL → PD | -.025 | .146 | .862 | -.034 | .039 | .384 | .009 | .152 | .953 | [-.289, .307] |
| COL → PD | -.131 | .060 | .028 | -.252 | .058 | < .001 | .121 | .084 | .151 | [-.044, .285] |
| AF → PD | -.037 | .024 | .124 | -.041 | .022 | .058 | .004 | .033 | .904 | [-.060, .068] |
| AM → PD | -.046 | .026 | .081 | -.054 | .026 | .033 | .009 | .037 | .813 | [-.063, .080] |
| TSC → PD | -.416 | .075 | < .001 | -.465 | .053 | < .001 | .049 | .092 | .590 | [-.131, .230] |
| BSC → PD | 37.995 | 11.392 | .001 | 30.209 | 23.713 | .203 | 7.786 | 26.413 | .768 | [-43.984, 59.555] |
| INL → TSC | -.073 | .042 | .079 | -.037 | .030 | .218 | -.036 | .051 | .475 | [-.136, .063] |
| COL → TSC | .004 | .030 | .885 | .004 | .037 | .915 | .000 | .048 | .993 | [-.094, .095] |
| AF → TSC | .089 | .021 | < .001 | .049 | .020 | .015 | .041 | .029 | .156 | [-.015, .096] |
| AM → TSC | .053 | .023 | .023 | .055 | .021 | .009 | -.002 | .032 | .940 | [-.065, .060] |
| INL → BSC | .005 | .002 | .022 | .000 | .000 | .751 | .005 | .002 | .021 | [.001, .009] |
| COL → BSC | -.016 | .003 | < .001 | -.001 | .001 | .155 | -.015 | .003 | < .001 | [-.020, -.009] |
| AF → BSC | -.004 | .001 | < .001 | .000 | .000 | .150 | -.003 | .001 | < .001 | [-.005, -.001] |
| AM → BSC | -.001 | .001 | .323 | .000 | .000 | .383 | -.001 | .001 | .556 | [-.002, .001] |
| INL → AF | -.416 | .120 | .001 | -.012 | .092 | .897 | -.404 | .155 | .009 | [-.708, -.100] |
| COL → AF | .748 | .102 | < .001 | .524 | .114 | < .001 | .224 | .150 | .135 | [-.070, .518] |
| INL → AM | -.411 | .099 | < .001 | -.102 | .103 | .323 | -.309 | .143 | .030 | [-.590, -.029] |
| COL → AM | .823 | .066 | < .001 | .635 | .122 | < .001 | .188 | .138 | .175 | [-.083, .458] |

Note: COL = collectivism, INL = individualism, AF = attachment to father, AM = attachment to mother, TSC = trait self-control, BSC = behavioral self-control, PD= psychological difficulties. Bold fonts indicate significant difference between the two samples.

Table 8.4 Comparison of the unstandardized indirect effects between Chinese and Italian adolescents

| | China | | | | Italy | | | | Difference ^{China-Italy} | | | |
|----------------|-------|------|----------|-----------------|-------|------|----------|----------------|-----------------------------------|-------------|-------------|-----------------------|
| | B | S.E. | <i>p</i> | 95% CI | B | S.E. | <i>p</i> | 95% CI | B | S.E. | <i>p</i> | 95% CI |
| INL → AF → PD | .015 | .012 | .186 | [-.007, .038] | .000 | .004 | .905 | [-.008, .008] | .015 | .012 | .229 | [-.009, .039] |
| COL → AF → PD | -.028 | .019 | .139 | [-.064, .009] | -.021 | .013 | .095 | [-.047, .004] | -.006 | .023 | .783 | [-.051, .038] |
| INL → AM → PD | .019 | .012 | .132 | [-.006, .043] | .006 | .006 | .369 | [-.007, .018] | .013 | .014 | .339 | [-.014, .040] |
| COL → AM → PD | -.038 | .021 | .073 | [-.079, .003] | -.035 | .019 | .064 | [-.071, .002] | -.003 | .028 | .912 | [-.058, .052] |
| INL → TSC → PD | .030 | .018 | .088 | [-.005, .065] | .017 | .014 | .234 | [-.011, .045] | .013 | .023 | .559 | [-.031, .058] |
| COL → TSC → PD | -.002 | .013 | .884 | [-.026, .023] | -.002 | .017 | .915 | [-.030, .032] | .000 | .021 | .999 | [-.042, .042] |
| INL → BSC → PD | .189 | .102 | .064 | [-.011, .389] | -.005 | .016 | .768 | [-.035, .026] | .193 | .104 | .063 | [-.010, .397] |
| COL → BSC → PD | -.610 | .206 | .003 | [-1.014, -.207] | -.045 | .060 | .458 | [-.163, .073] | -.566 | .215 | .009 | [-.987, -.144] |
| AF → TSC → PD | -.037 | .011 | <.001 | [-.058, -.016] | -.023 | .010 | .017 | [-.041, -.004] | -.014 | .014 | .309 | [-.042, .013] |
| AM → TSC → PD | -.022 | .011 | .041 | [-.043, -.001] | -.026 | .010 | .011 | [-.045, -.006] | .004 | .015 | .801 | [-.025, .033] |
| AF → BSC → PD | -.142 | .054 | .008 | [-.248, -.036] | -.014 | .018 | .436 | [-.050, .021] | -.128 | .057 | .025 | [-.240, -.016] |
| AM → BSC → PD | -.034 | .036 | .346 | [-.104, .037] | -.010 | .017 | .569 | [-.042, .023] | -.024 | .040 | .541 | [-.102, .054] |

Table 8.4 Comparison of the unstandardized indirect effects between Chinese and Italian adolescents (continued)

| | China | | | | Italy | | | | Difference | | | |
|---------------------|-------|------|----------|----------------|-------|------|----------|----------------|--------------|-------------|-------------|-----------------------|
| | B | S.E. | <i>p</i> | 95% CI | B | S.E. | <i>p</i> | 95% CI | B | S.E. | <i>p</i> | 95% CI |
| COL → AF → TSC → PD | -.028 | .009 | .001 | [-.045, -.011] | -.012 | .006 | .039 | [-.023, -.001] | -.016 | .010 | .126 | [-.036, .004] |
| COL → AF → BSC → PD | -.107 | .044 | .015 | [-.193, -.021] | -.007 | .011 | .512 | [-.030, .015] | -.099 | .045 | .028 | [-.188, -.011] |
| COL → AM → TSC → PD | -.018 | .009 | .044 | [-.035, -.001] | -.016 | .007 | .021 | [-.030, -.002] | -.002 | .011 | .879 | [-.024, .021] |
| COL → AM → BSC → PD | -.028 | .029 | .333 | [-.084, .028] | -.006 | .012 | .628 | [-.031, .018] | -.022 | .031 | .487 | [-.083, .040] |
| INL → AF → TSC → PD | .015 | .007 | .024 | [.002, .029] | .000 | .002 | .905 | [-.004, .005] | .015 | .007 | .036 | [.001, .029] |
| INL → AF → BSC → PD | .059 | .027 | .027 | [.007, .112] | .000 | .002 | .941 | [-.004, .005] | .059 | .027 | .028 | [.006, .112] |
| INL → AM → TSC → PD | .009 | .005 | .076 | [-.001, .019] | .003 | .003 | .355 | [-.003, .008] | .006 | .006 | .272 | [-.005, .018] |
| INL → AM → BSC → PD | .014 | .015 | .348 | [-.015, .043] | .001 | .003 | .741 | [-.005, .007] | .013 | .015 | .393 | [-.017, .043] |

Note: COL = collectivism, INL = individualism, AF = attachment to father, AM = attachment to mother, TSC = trait self-control, BSC = behavioral self-control, PD = psychological difficulties. Bold fonts indicate significant difference between the two samples.

Brief discussion

Based on Study 2, the present study tested the association between attachment to parents, trait and behavioral self-control, and psychological difficulties using both self-report and behavioral measures. The influences of intercultural and intracultural constructs were taken into account as well.

In general, the current findings show that trait self-control mediates the association between attachment to parents and psychological difficulties in both samples; whereas behavioral self-control only mediates the association between attachment to father and psychological difficulties in Chinese adolescents. These findings suggest that secure attachment to parents mitigates psychological difficulties through high (especially trait) self-control.

Both intercultural and intracultural factors play a significant role in the relationship between attachment to parents, self-control, and psychological difficulties. Generally, the influence of intracultural factor on the model lies in that it has variations in attachment to parents, behavioral self-control (only for Chinese sample) and psychological difficulties. By contrast, intercultural factor works in a different way, namely that it moderates the association between intracultural factor, attachment to parents, self-control, and psychological difficulties. The detailed discussion of the overall association and the roles of intercultural and intracultural effects are presented in the general discussion section.

One thing should be noted. In the current study, there is no significant difference in the level of collectivism and individualism between Chinese and Italian adolescents, which provides direct evidence that Chinese young people may not be more collectivistic or less individualistic than their Italian counterparts. This may be due to

two reasons.

On the one hand, as mentioned earlier, Hofstede's methodology to calculate the national-level individualism has been thought to be oversimplified and fallacious and national-level individualism is by no means equal to individual-level individualism (for a review, see Bond, 2002). On the other hand, individualism-collectivism changes depending on a country's economic and social development (Triandis & Gelfand, 1998). As said before, Hofstede's categorization was drawn before the dramatic economic and social development of China. The current Chinese sample was recruited from Guangzhou, a highly modernized and economically developed city in Southern China. The society of Guangzhou is much influenced by Western culture through social medias. In addition, students in Guangzhou are highly competitive to achieve academic accomplishments. As such, it is not surprising that adolescents in Guangzhou endorse the statements that assess individualism (e.g., "Winning is everything"; "When another person does better than I do, I get tense and aroused").

In sum, the findings of the present research indicate that trait self-control and behavioral self-control both play a role in the relation between attachment to parents and psychological difficulties. Moreover, both intercultural and intracultural factors are also important.

Chapter 9 General discussion

Employing both paper-and-pencil and behavioral measures as well as multi-informant report and multi-group path analyses, the current mixed-method research project investigated adolescents' psychological difficulties and their associations with attachment to parents and self-control in Chinese and Italian community-based adolescents, and the roles of both intercultural and intracultural factors were also taken into consideration.

This study was conducted in a number of steps. First, psychological difficulties of Chinese and Italian adolescents were screened and the role of an intercultural factor was examined by comparing both self-report and parent-report psychological difficulties using a series of analyses of variances (ANOVAs) in Study 1. Second, the protective effects of attachment to parents and trait self-control on adolescents' psychological difficulties and the mediation of trait self-control between attachment to parents and psychological difficulties were examined in both Study 2 and 3. Third, the influences of both intercultural and intracultural variables were examined. Specifically, the role of an intercultural factor was investigated in both Study 2 and 3 employing multi-group path analysis whereas an effect of intracultural variable was examined in Study 3 by including it in the model.

A number of interesting results were generated. (1) There were both intercultural and intracultural variations in adolescents' psychological difficulties (Study 1 and 3). Specifically, Chinese adolescents reported and were reported by parents to have more psychological difficulties. Moreover, endorsement of collectivism linked with fewer psychological difficulties. (2) Attachment to parents (especially attachment to mother)

was an important protective factor of adolescents' psychological difficulties (Study 2 and 3), especially for Italian adolescents. (3) High level of trait self-control related to fewer psychological difficulties in both samples (Study 2 and 3), whereas good behavioral self-control linked with fewer problems in Chinese adolescents (Study 3). (4) Trait self-control was found to mediate the association between attachment to parents and psychological difficulties in both samples (Study 2 and 3) whereas behavioral self-control served as a mediator in the relationship between attachment to father and psychological difficulties in Chinese adolescents (Study 3). (5) The association between the intracultural factor and psychological difficulties was mediated by attachment to parents and self-control (Study 3); the direct and indirect effects in the mediation model were moderated by an intercultural factor (Study 2 and 3). Each research question is commented on below.

Regarding the first research question "*Are there intercultural and intracultural influences on adolescents' psychological difficulties?*" Both self-report and parent-report data were collected to address this question. Results of Study 1 showed that there were intercultural influences in adolescents' psychological difficulties, with Chinese adolescents reporting and being reported to display more psychological difficulties than their Italian counterparts. These findings are consistent with previous research that compares psychological difficulties between Chinese and Italian adolescents (Delvecchio, Mabilia, Di Riso, et al., 2015; Li, Delvecchio, Lis, et al., 2015).

This question was also addressed in Study 3 where the influence of an intracultural factor on the levels of adolescents' psychological difficulties was found. Endorsement of collectivism, rather than individualism, is related to fewer psychological difficulties in both samples. This finding is consistent with previous

studies that demonstrate collectivistic values are a crucial protective factor of psychological difficulties (e.g., Li et al., 2010; Schutte & Malouff, 2012). The current study fails to reveal a significant relation between individualism and psychological difficulties, indicating that endorsement of individualistic values appears less important in the psychological difficulties in Chinese and Italian adolescents. The differential association between individualism-collectivism and adolescents' psychological difficulties provide further evidence for Triandis's (Triandis, 1995; Triandis & Gelfand, 1998) view that individualism and collectivism should be considered as two orthogonal dimensions rather than as two poles on a continuum.

With respect to the second research question "*Are attachment to parents and self-control protective factors of psychological difficulties?*" This question was tested both in Study 2 and 3. Regarding the role of attachment to parents in adolescents' psychological difficulties, it was found in Study 2 that attachment to mother was a protective factor of adolescents' psychological difficulties in both samples whereas attachment to father was related to fewer problems only in Italian adolescents. In study 3, when the intracultural factor was included in the model, only the association between attachment to mother and psychological difficulties was found significant. The differences in these results could be due to two reasons. On the one hand, an intracultural effect is not taken into consideration in Study 2 but is also included in the model in Study 3. The inclusion of an intracultural variable (i.e., individualism-collectivism) in the model may explain some variance of attachment to parents and cause the differences in the results. On the other hand, the two studies take place at different time points and among different participants, and thus the findings could be due to measurement or systematic errors. Nevertheless, the findings from the two studies have one thing in common, namely that attachment to mother is

consistently related to fewer psychological difficulties in Italian adolescents. This common point greatly speaks to the importance of ongoing mother-adolescent relationship in the course of the healthy development of Italian adolescents.

The influence of self-control on psychological difficulties is interesting. In both Study 2 and 3, trait self-control, no matter whether an intracultural variable was included in the model or not, consistently showed strong influence on psychological difficulties in both Chinese and Italian adolescents. This is consistent with the view that most of psychological dysfunctions and maladaptive behaviors originate from a lack of self-control (Baumeister et al., 1994; Baumeister & Heatherton, 1996; Gottfredson & Hirschi, 1990) and with previous studies that have demonstrated that low level of trait self-control is related to a wide range of maladaptive developmental outcomes (e.g., DeWall et al., 2012; Finkenauer et al., 2005; Li, Develcchio, Lis, et al., 2015; Li, Nie, et al., 2014; Tangney et al., 2004, for a review, see de Ridder et al., 2012).

The influence of behavioral self-control, as assessed by the Stroop task, on adolescents' psychological difficulties is quite different from the picture of trait self-control. The Stroop task is often thought as a popular task that assesses inhibitory ability and it is usually considered as an analogous term of self-control due to their conceptual overlap (for a review, see Duckworth & Kern, 2011 and Hofmann et al., 2012). The results of Study 3 demonstrated that better behavioral self-control related to fewer psychological difficulties *only* in the Chinese sample. This somehow conforms to previous studies which have found that Chinese children have better inhibitory ability than Western children (e.g., Lan et al., 2011; Sabbagh et al., 2006). This may be because behavioral inhibition is important in the Chinese context, and therefore, it is greatly underscored by Chinese parents in their socialization processes.

Behavioral inhibition is not as much stressed by Italian parents; in contrast, behavioral autonomy and self-expression are more favored by Italian parents in their socialization processes (Inglehart & Oyserman, 2004; Scabini, Marta, & Lanz, 2006; Yeh & Bedford, 2004). This result also conforms to previous research which posits that inhibition (particularly emotional inhibition) is more stressed and more frequently used by Chinese people than by European and American people and that failure of emotional inhibition is related to more maladaptive problems in Chinese adolescents and young people (Butler, Lee, & Gross, 2007; Mauss & Bulter, 2010; Rothbaum & Rusk, 2011; Soto, Perez, Kim, Lee, & Minick, 2011). Taken together, inhibitory ability appears to be more crucial to Chinese than to Italian adolescents but trait self-control appears equally crucial for both Chinese and Italian adolescents.

The third research question pertains to “*Whether self-control mediates the association between attachment to parents and psychological difficulties?*” This question was examined in Study 2 and 3.

In both studies, trait self-control was found to mediate the association between attachment to father and psychological difficulties and the one between attachment to mother and psychological difficulties in both Chinese and Italian adolescents. This finding is highly consistent with a recent research that reveals trait self-control mediates the link between attachment to parents and depressive symptoms (Li, Delvecchio, Lis, et al., 2015). It also supports the notion that current attachment relationship with parents adds to individuals’ self-control, which in turn associates with fewer psychological difficulties. Moreover, it provides support to the self-control theory proposed by Gottfredson and Hirschi (1990) which posits that good parent-child relationship promotes the development of the child’s self-control, which in turn is conducive to the promotion of desired behaviors and reduction of undesired

behaviors.

In Study 3, behavioral self-control was also found to mediate the association between attachment to father and psychological difficulties in Chinese adolescents. As mentioned before, inhibitory ability is emphasized in the Chinese cultural context. Fathers in the Chinese context are a representative of power and authority in the family who often require their child to inhibit themselves, as depicted by a Chinese saying “strict father, kind mother” which has been assumed to link with a child’s inhibitory ability (Lau, Lew, Hau, Cheung, & Berndt, 1990; Shek, 1998). A strong father-child relationship fosters the child to comply with his/her father’s requirement in the socialization processes and therefore may promote better inhibition ability. As noted before, inhibition is an important strategy to maintain the harmony of interpersonal relationships and a violation of harmonious relationships is a crucial cause of Chinese people’s psychological difficulties (Chan & Leong, 1994; Hsu, 1985). Again, such inhibition is not as much stressed in the Italian families as in the Chinese families. Hence, high inhibitory ability serves as a mediator in attachment to father and psychological difficulties only in Chinese adolescents. However, given that few studies have examined this issue and the residual variance of the Stroop in the model is substantial, one must interpret this finding with caution and more research is necessary.

The last research question concerns about “*Do intercultrual and intracultural factors play a role in the relationship between attachment to parents, self-control, and psychological difficulties?*” This question was studied in Study 2 and 3 in different steps.

First, in Study 3, the role of intracultural factors was taken into account by be included as an antecedent in the model. The results showed that collectivism imposed

a negative effect on psychological difficulties, which is consistent with previous studies (Brougham & Haar, 2013; Du, Li, Lin, & Tam, 2014; Li et al., 2010). This association was mediated by attachment to parent and trait self-control in both samples. An indirect effect of individualism on psychological difficulties through attachment to father and self-control (both trait and behavioral self-control) was found in Chinese samples. These findings do suggest that intracultural factor plays a role in adolescents' psychological difficulties both directly and indirectly, namely through attachment to parents and self-control (in particular trait self-control).

Second, the influences of intercultural variable on the direct and the indirect paths were examined in both Study 2 and 3. The findings of Study 2 showed that there were few intercultural differences in the direct and indirect effects. However, the findings of Study 3 were much more complicated, as shown that there were some intercultural differences in both direct and indirect effects, mainly about the association between individualism and attachment and the role of behavioral self-control. The significant differences in the direct and indirect effects imply that the examined associations are moderated by intercultural variable.

Taken together, these findings suggest that there are both intercultural and intracultural variations in the levels of adolescents' psychological difficulties and their associations with attachment to parents and self-control.

Implications for future research

The current research bears several implications for future research and practice.

First, culture is important in understanding adolescents' psychological difficulties. Previous research about culture and psychological difficulties may either focus on the influence of intercultural variables (e.g., different nations; social structure, Forbes,

Zhang, Doroszewicz, & Haas, 2009; Li et al., 2015; Vazsonyi & Belliston, 2006, 2007; Vazsonyi, Pickering, Junger, & Helsing, 2001) or on intracultural variables (e.g., individualism and collectivism, Brougham & Haar, 2013; Caldwell-Harris & Ayçiçeği, 2006; Du et al., 2014; Fulmer et al., 2010; Lin et al., 2011). However, there is a dearth of research that has addressed adolescents' psychological difficulties simultaneously focusing on both cultural aspects. According to the present findings, it appears that both intercultural and intracultural factors are significant in accounting for the variations of adolescents' psychological difficulties.

The current research provides early evidence that both types of cultures are crucial in the understanding of adolescents' psychological difficulties, implying that both intercultural and intracultural variables should be emphasized in future research. The influence of culture can be addressed by future research in two ways. First, future research can investigate how intercultural and intracultural effects influence other aspects of psychological difficulties, such as awareness, expression, treatment, and so on. Second, future research can also examine the influences of other cultural variables other than individualism and collectivism (e.g., masculinity, avoidance of uncertainty, tightness-looseness) on psychological difficulties as culture contains more than one dimension (Gelfand, 2012; Gelfand et al., 2011; Kirkman, Chen, Farh, Chen, & Lowe, 2009).

Second, trait self-control and behavioral self-control are weakly correlated. This implies that it is necessary to rethink the definition and connotation of self-control in the future research. A meta-analysis study (Duckworth & Kern, 2011) has shown that self-control assessed by questionnaire is only moderately related to the one assessed by executive control measure such as the Stroop task. A recent research has also demonstrated that these two measures assess different components/aspects of

self-control and thus they should not be used interchangeably or aggregately (Allom et al., 2016). Some scholars (e.g., de Ridder et al., 2011) have argued that trait self-control is supposed to contain both inhibition and initiation; whereas self-control assessed by the Stroop task mainly focuses on inhibition. Given the void of the research about the initiation aspect of self-control, future study should place more attention on this issue. Assessing self-control using different measures and modalities is important, but one must be very careful and meticulous about the homogeneity of these measures before making any decision to treat them as different measures or to combine them as a whole.

Third, the overall association between attachment to parents, self-control, and psychological difficulties examined in Study 3 was cross-sectional in nature although in Study 2 assessment was completed at two time points with a one-month interval. However, it is also possible that the presence of low self-control and psychological difficulties may adversely influence subsequent attachment to parents, which in turn leads to even lower self-control and more psychological difficulties in the long run. For example, previous study has disclosed a reciprocal association between attachment to parents and problem behavior in early adolescents (Buist et al., 2004) and between maternal attachment and self-control in childhood (Meldrum, Young, Hay, & Flexon, 2012). Future study may attempt to investigate this issue using longitudinal design which allows one to reveal whether there are reciprocal relationships among these variables and to disclose the more dynamic processes.

Fourth, recent studies based on Western samples have found that people high in trait self-control are not as adept at inhibiting their impulses as thought and that they are more likely to use other strategies than mere inhibition to facilitate advantageous outcomes (Ent, Baumeister, & Tice, 2015; Galla & Duckworth, 2015; Hofmann,

Baumeister, Förster, & Vohs, 2012). However, our current findings show that trait self-control is important in both samples but behavioral self-control is only crucial in Chinese but not Italian adolescents. As noted above, trait self-control contains both inhibition and initiation whereas behavioral self-control as assessed in the current research mainly focuses on the inhibition aspect. This implies a possibility that the mechanism of self-control (e.g., inhibition) may be culturally-bounded.

Two promising research lines are identified for future study. On the one hand, although self-control is related to numerous positive life outcomes such as less psychopathology and more psychological adjustment, not many studies have been done to address the underlying mechanisms hitherto (Ent et al., 2015; Galla & Duckworth, 2015; Li, Delvecchio, Lis, Nie, & Di Riso, 2016). This line of research is important because it provides insights for intervention. Trait self-control, similar to other personality traits, has been considered relatively stable and not easy to change over time (e.g., Gottfredson & Hirschi, 1990; Moffitt et al., 2011; Schmeichel & Zell, 2007; Tangney et al., 2004) and thus may not be an ideal target to intervene. In this case, understanding how trait self-control links with psychological difficulties is greatly paramount because such research will offer insights to the prevention and intervention of adolescents' psychological difficulties and the promotion of psychological wellbeing targeting the mediators, especially for those low in trait self-control. On the other hand, although inhibition is not thought as a crucial mechanism among Western samples, it would be interesting to investigate whether such mechanism of self-control differ in various countries given that inhibition theoretically appear to be more important to some countries (e.g., China).

Fifth, according to the results of Study 3, the association of collectivism and psychological difficulties can be explained by attachment to parents and trait

self-control in both cultures, but the relation of individualism to psychological difficulties cannot be accounted for by these two variables. Nevertheless, this by no means suggests that the link of individualism with adolescents' psychological difficulties cannot be explained by other factors. For example, Du and colleagues (2014) found that individuals' hopelessness fully mediated the association between individualism and substance use in Chinese migrants. Similarly, self-esteem may be more capable to account for the relation of individual cultural orientation to maladjustment / adjustment given its significance in individualistic cultures (e.g., Caldwell-Harris & Ayçiçeği, 2006; Fulmer, 2010). Future research may investigate whether the association between individualism and psychological difficulties can be explained by other variables such as self-esteem.

Sixth, the current findings could serve as the empirical foundation of interventions of adolescents' psychological difficulties for serving adolescents and families in different cultures. It is considered that interventions that aim to mitigate problem behavior and promote psychological well-being should take cultural, familial, and individual factors into consideration (Yasui & Dishion, 2007). To this end, it is essential to reveal the dynamic processes among culture, familial factors, and individual factors in the first place. The current findings yield two implications for such intervention. On the one hand, targeting familial factors such as attachment to parents is a possible way to circumvent Chinese and Italian adolescents' psychological difficulties. On the other hand, when designing intervention program, practitioners should take the influence of intracultural factors into consideration as well.

Last but not least, future research should consider national-level and individual-level individualism-collectivism meticulously when this construct is examined. Although China and Italy is thought of a representative of collectivistic and

individualistic nation, respectively, findings of Study 3 showed that Chinese adolescents showed no more collectivism or less individualism than their Italian counterparts. This supports Bond's (2002) notion that national-level individualism and collectivism and individual-level individualism and collectivism are distinct and should not be equated. For these sakes, future research that aims to examine cultural influences on individuals' cognition, emotion, and behavior in the perspective of individualism-collectivism should clearly distinguish these two terms and not use them interchangeably. If possible, simultaneous examination of both types of individualism-collectivism appears more desirable.

Limitations and contributions

Like every study, the current research has some limitations that should not be neglected. First, across the three studies, Chinese and Italian samples were recruited in the same city/region. As there are tremendous differences in the socio-economic context between Guangzhou and other parts of China and also there are differences in many aspects between northern and southern Italy, the current findings may not be fully generalized to other regions of China or Italy. Future research should incorporate diverse samples to replicate the findings of this study.

Second, although multi-informants were used and both self-report and behavioral measures were included, the current study is cross-sectional / short-term longitudinal in nature. This limits the possibility to infer causal relationship. Longitudinal research with longer interval and (semi-) experimental designs are greatly encouraged to examine how attachment to parents intervenes with self-control to predict the onset and the development of psychological difficulties among adolescents.

Third, family socio-economic status (SES) was not included across studies due to two reasons. First, family annual income is an ideal index of SES, but this is highly private and many parents did not want to share such information with researchers. Second, educational level and occupation are two alternative indexes of SES, but these two indexes are not comparable due to huge difference in the categorization of education and occupation between the two countries. Therefore, family SES was dropped and future research should come up with some objective and feasible indexes to assess and control family SES when the current issue is examined.

Notwithstanding, this project contributes to the literature in terms of theory and practice. Theoretically, the current research extends the attachment theory in two ways. On the one hand, the current findings support that the role of self-control is equally important in explaining *how* secure attachment is related to better mental health in both Chinese and Italian adolescents. This offers crucial proof that the working processes between secure attachment to parents and psychological difficulties through self-control can be applicable to different countries. On the other hand, mother is often considered primary attachment figure in the family while father is thought of as secondary attachment figure. In the literature, compared to research about the influence and mechanism of attachment to mother in adolescents' psychological health, research of attachment to father is disproportionately less. This research adds to the limited volume of literature on this issue.

This research is also valuable in terms of practically use. Norms are important in the justification of individuals' psychological difficulties and thus have great clinical meanings. The SDQ is a cost-effective and time-saving screening instrument of child and adolescent psychological difficulties, but the norms of the SDQ have been developed only in a few countries (<http://www.sdqinfo.org>). The current data

contributes to the respective norms of Chinese and Italian adolescents' psychological difficulties assessed by the self-report and parent-report SDQ, which would be beneficial to researchers and practitioners of respective countries. Particularly, as far as I am aware, when parent-report SDQ is administered, researchers do not usually separate father-report and mother-report scores. The current study provides both father-report and mother-report scores of the SDQ, which to some extent adds to the literature of this issue.

Concluding remarks

Psychological difficulties are commonplace during adolescence. Given the detrimental influences of psychological difficulties on adolescents' development, these problems should be seriously attended. Research into the protective factors and their mechanism are of great importance to the understanding and treatment of adolescents' psychological difficulties. Using multiple informants of report and modalities of assessment, the current research demonstrates that both secure attachment to parents and high level of trait self-control are substantially important in the prevention of psychological difficulties both for Chinese and Italian adolescents. Plus, the present study further reveals that trait self-control partly explains how secure attachment to parents is related to fewer psychological difficulties in both samples. Moreover, when these associations are examined, the influences of intercultural and intracultural factors should not be ignored. Research into adolescents' psychological difficulties is definitely not an easy task, but through all the endeavors made by researchers around the globe, this issue will be tackled more thoroughly and our next generation will eventually grow more psychological healthily.

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