Educational Sciences: Theory & Practice - 13(4) • 2059-2070

www.edam.com.tr/estp
DOI: 10.12738/estp.2013.4.1681

How do Thinking Styles Influence Collaborative Dispositions? A Study on the Relationships between Thinking Styles and Collaborative Dispositions for Youngsters in Taiwan

Mingchang WU[a]
National Yunlin University of Science and Technology

Shihuei HO[b]
Taipei Municipal University of Edcation

Hsiuhsu LIN[c]
Chaoyang University of Technology

Wenlung CHANG[d]
National Yunlin University of Science and Technology

Lihua CHEN[e]
National Yunlin University of Science and Technology

Abstract

Collaboration dispositions keep attracting high attention in the business world for organizational competition and teamwork efficiency. Educators also highly value the cultivation of youngsters' thinking strategies and styles which facilitate their learning performance and even career achievement. This study was conducted to identify the relationship among thinking styles (including positive thinking and negative thinking) and collaborative dispositions. Three self-rating instruments were employed to survey 901 college students' experience as research data. A series of analyses on the reliability and validity of instruments were conducted to validate the measurement model. The SEM analysis results indicated the structural model and the influences of both thinking styles on the youngsters' collaborative dispositions. In addition, it was concluded that only the individuals highly evaluating others were willing to and able to collaborate with others well. On the other hand, the factor of maladjustment and little desire for change was the dominant negative thinking which severely eliminated collaborative dispositions. Several suggestions were accordingly provided on the bases of research conclusions.

Key Words

Collaborative Dispositions, College Students, Thinking Styles.

a Mingchang WU, Ph.D., is a professor of Vocational and Technology Education. Contact: Graduate school of Vocational and Technology Education, National Yunlin University of Science and Technology, Taiwan. Email: Wumc@yuntech.edu.tw.

b Shihuei HO, Ph.D., is an associate professor. Contact: Center for Teacher Education and Career Guidance, Taipei Municipal University of Education, Taiwan. Email: shihuei@tmue.edu.tw.

c **Hsiuhsu LIN** is a senior lecturer. *Correpondence:* Hsiuhsu LIN, Chaoyang University of Technology, Department of Applied Foreign Languages, Taiwan. Email: hhlin@cyut.edu.tw.

d Wenlung CHANG is a doctoral student. Contact: Department of Graduate School of Technological & Vocational Education, National Yunlin University of Science and Technology, Taiwan. Email: D10043002@yuntech.edu.tw.

e Lihua CHEN is an assistant. Contact: Graduate school of Adult & Continuing Education, National Yunlin University of Science and Technology, Taiwan. Email: Chenliha@yuntech.edu.tw.

Collaboration is highly valued and extensively adapted in the business world and educational settings to enhance efficiency and effectiveness through participants' multifarious expertise and experiences (Tschannen-Moran, Parish, & DiPaola, 2006). Collaboration is much more than physically gathering together for issue discussion or sharing information among team participants, although each component is important in the teamwork (Smith, 2001). Collaborative teams assume the ownership of the process and results when participants are encouraged and empowered to work together toward a common goal and reciprocally receive the team achievement (Zurita & Nussbaum, 2004); that is, team achievement highly relies on team members' involvement, attitude, and commitment regarding interacting with each other. These crucial components seem to reflect participants' intrapersonal and interpersonal dispositions, which are constantly developed through their recognition and thinking styles (Balkis & Isiker, 2005; Zhang, 2002a).

Thinking styles are cognitive activities and a mental attitude that people habituate themselves to admit into their preferred mind thoughts and strategies to interpret information, and synthesize for intellectual style constructs (Zhang, 2006). These intellectual style constructs might lead individuals toward either constructive perspectives (i.e. positive thinking) or pessimistic cognitive complexities (i.e. negative thinking) to approach themselves or outside world (Haller & Courvoisier, 2010). Positive thinking anticipates an encouraging and successful outcome of every context and event by viewing individual self and others in a positive light, as well as results in high self-evaluation, reciprocal evaluation, and daily function (Seligman & Csikszentmihalyi, 2000). As to negative thinking, it usually leads to the opposite perspective and unfavorable results such as denial, low esteem, hostility, and other related symptoms of depression and bipolar disorder like manic depression (Kelly & Barsade, 2001; Scherer, Schorr, & Johnstone, 2001).

Curiosity emerges while cognitive constructs and social perspectives are covertly developed in terms of different thinking styles, which influence both intrapersonal and interpersonal skills that are crucial components of team collaboration. Therefore, do thinking styles relate to individuals' collaborative dispositions? How do thinking styles including multifarious constructs create internal and external effects on each other?

Research Purpose

This study purports to identify the functional structure among thinking styles and collaborative dispositions by determining the relationships between thinking styles, including positive thinking and negative thinking, and collaborative dispositions. In addition, this study undertakes further realizing how collaborative dispositions are influenced by thinking styles.

Research Hypotheses

Based on the aforementioned research purposes, this study proposes the following research hypotheses:

(1) There is a significantly positive relationship between positive thinking styles and collaborative dispositions.

(2) There is a significantly negative relationship between negative thinking styles and collaborative dispositions.

(3) There is a significantly negative relationship between positive thinking styles and the negative thinking styles.

Collaborative Dispositions

Collaboration has been identified as a dominant component for both organizations and individuals to enhance, even ensure, the performance and success in this competitive era (Tschannen-Moran, 2001; Zurita & Nussbaum, 2004). For the purpose of collaboration, individuals with different backgrounds and professional expertise are intended to disclose information, create innovative ideas through brainstorming, and solve mutual problems together for better team achievement and mutual goals through teamwork processes (Boddy, Macbeth, & Wagner, 2000). Efficient collaboration therefore needs the reciprocal principles and constructive relationship among the team members (Sergiovanni, 2004). Team members are usually required to fully understand the mutual goals, build cooperative consensus, and actively participate in information disclosure processes with sophisticated interpersonal skills and communication skills for effective negotiation and conflict management (Green & Rechis, 2006; Moyers, Miller, & Hendrickson, 2005). It also calls for assertion and self-control (Lane, Givner, & Pierson, 2004; Lane, Pierson, & Givner, 2004) as well as positive engagement and supportive intervention (Soan, 2006) while working with each other. In addition, a series of studies demonstrate that successful collab-

oration relies on, besides participants' abilities and expertise, their dispositions of voluntary commitment (Cahill & Mitra, 2008; Rubin, 2002), interactive contribution (Kelly & Barsade, 2001), ongoing adjustment (Lawson, 2003), and inclusive cooperation (Baker, 2009) so as to reach a common goal and ensure collaboration quality.

Synthetically, the aforementioned capabilities and dispositions facilitating collaboration quality stem from team members' belief in self-power, self-esteem (Trickey & Topping, 2006), self-efficacy (Demir, 2008), and cooperative social competence of intercultural mentoring and pervasive relationships (Koskinen, Tossavainen, 2003). These dispositions seem to reflect the individuals' positive thinking which facilitates self-improvement, self-renewal, self-evaluation and self-actualization (Arani, 2001). Individuals with positive thinking perform better in team risk-taking and creativity, collective performance, cooperative relationships (Mesmer-Magnus & DeChurch, 2009), open-minded to appraisal and criticism (Plowman & McDonough, 2010). In other words, negative thinking style leads individuals to opposite personality, interpersonal relationship, and collaboration intention. However, thinking styles, including positive thinking and negative thinking, result in various prefiguration of information disclosure and interpretation, reasoning direction, individuals' recognition and attitudes toward self, events, and problem solutions (Inkpen & Tsang, 2005).

Thinking Styles

Thinking is a series of deliberate exploration process integrating previous experiences for a purpose which might include understanding, making a plan and decision, and solving a problem (De Bono, 1991; Hager, Sleet, Logan, & Hooper, 2003). People's perspectives and recognition are usually developed through the five categories of thinking processes: (1) recall; (2) analysis; (3) comparison; (4) inference; and (5) evaluation (Jones, 2006). During the process of thinking, individuals might unconsciously choose their preferred model of thinking strategies to interpret information and/or event, and propose a technique or manner to deal with problems (Grigorenko & Sternberg, 1997). This habitual preference constructs individuals' thinking styles to inquire and proceed relevant information, undertake reasoning for problem solving, and evaluate the action results. Therefore, thinking styles consequently influence individuals' self-concepts, social roles to the world, and perspectives to interact with the world (Pogrow, 2009).

Zhang's research (2002b) revealed that students' thinking styles vary result of their personal characteristics and environmental factors, such as teachers' thinking styles may create interactive relationships with students; of course, students' thinking styles dominate their academic performance and self-concepts. Pogrow (2009) believed that youngsters' thinking styles determine their perspectives toward themselves, daily lives, and interaction with their peers. Career achievement mainly results from favorable self-concept, interpersonal relationship and optimistic expectation; namely, these elements are created through positive thinking (Lustig & Strauser, 2002). On the contrary, negative thinking styles may result in opposite misery failure of intrapersonal and interpersonal relationships, and career performance.

Positive Thinking: For the last decade, positive thinking has been variously defined as follows: (*i*) individuals view themselves in a positive way and mentally healthy aspects (Ben-Ze'ev, 2000); (*ii*) individuals hold a optimistic vision toward people, circumstances, events or behaviors (Sasson, 2011); (*iii*) positive thinking is a mental activity with optimistic attitude that admits into the mind thoughts, words and images that are constructive to growth, expansion and success (Fredrickson, 2001); (*iv*) positive thinking is the act of thinking good or affirmative thoughts to dispose of depressing, unhealthy or negative thoughts, and reverse the damaging effects of negative thinking (Tugade, Fredrickson, & Barrett, 2004); and (*v*) individuals hold a positive, optimistic and aggressive belief to interpret him\herself, others, and events (Mohanty, 2009; Wilkinson & Kitzinger, 2000).

Synthetically, positive thinking is a mental activity with positive emotions and expectant attitudes to vision stimuli in the environment, undertake self-talk, perceive a bright belief, and translate into a constructive outlook for better realities (Chang & Sanna, 2001; Seligman & Csikszentmihalyi, 2000). Individuals with positive thinking envision the brighter side of events and believe everything can be improved for better results (Mohanty, 2009), then be more enthusiastic and active to pursue career goals and build an interpersonal relationship with higher self-efficacy and pleasant emotion. People who are encouraged to possess positive thinking adapt their lives with high expectation on selves and the future, and confidently transform irrational beliefs triggered by negative events to rational perspectives (Williams, Zainuba, & Jackson, 2003).

It is found that people with positive thinking behave in four major domains: (*i*) future expectations, (*ii*) self-evaluation, (*iii*) daily functioning, and (*iv*) other evaluation (Ingram & Wisnicki, 1988; Moehead, Barraclough, & Alavi, 2008). These behaviors lead to more flexible attitudes and creative processing, respect others, and share and collaborate with others for mutual goals.

Negative Thinking: However, negative thinking seems to appear more prevalent than positive thinking (Sasson, 2011). Negative thinking, as a symptom of depression and bipolar disorder, makes people difficult to vision things in a positive way, leads people to feel frustrated, sad and hopeless about their future, and even believes that their lives are worthless (Dahl, Austin, Wagner, & Lukas, 2008).

Negative thinking reflects individuals' low self-esteem and personality, which hesitate to change and\or adjust for environments (Lustig & Strauser, 2002). These disadvantageous components might cause lower self-concepts and achievement, as well as less happiness and friends (Kelly & Barsade, 2001). Consequently, people with negative components lessen self-expectation and expectation on others and society, decrease motivation to pursue career achievement, and demote their interaction with others around their environments (Austin & Cilliers, 2011). Certainly, these unfavorable negative thinking styles mutilate interpersonal relationships and collaborative teamwork.

Theoretical Framework

These studies aforementioned discussing thinking styles and collaborative issues were conducted in business world and drew the conclusion that collaboration quality and team achievement rely on participants' expertise, enthusiastic involvement, considerate personalities, and constructive communication skills. That is, in other words, those crucial elements result from positive thinking styles. Curiosity emerges that if the young students in college settings possess the similar psychological relationships among the thinking styles and collaborative dispositions? It is inquisitive to propose the hypothesis that there is a significant relationship between positive thinking and collaborative dispositions. In addition, negative thinking leads people to vision dark side of the world and constructs inferior self-concept and negative expectations on both self and others. The intrapersonal and interpersonal relationships of insipid and unmotivated traits appear limited effective interaction and social relationship in teamwork. That is, negative thinking is hypothesized to hold a significantly negative relationship with collaborative dispositions. While positive thinking and negative thinking lead people to vision self and the world in opposite perspectives, a significantly negative relationship between these two thinking styles is rationally hypothesized.

Method

Research Design

The purpose of this study is to identify the influential powers of thinking styles, like positive thinking and negative thinking, to collaborative dispositions. Research interests are also focused on the influential effect of each construct of positive thinking, such as future expectation, self-evaluation, daily functioning, and other evaluation, and that of negative thinking, including negative self-concept and expectation, giving up, helplessness, personal maladjustment, less desire for change, and low self-esteem on the collaborative dispositions. Furthermore, this study would like to investigate the relationship between these two thinking styles (Figure 1.).

Research Participants

College students were the major targeted population. Considering the research expense and participants' consensus, participants were selected and invited from 6 universities in central Taiwan according to purposeful sampling strategies. There were 1,200 college students received three instruments for this study, and 901 of them completed all instruments with valid data (75% of return rate). These 901 participants' data were used for further research analyses. The demographic analysis indicated that 408 (45.3%) participants were public university students; thus 493 (54.7%) were from private ones; including 390 (43%) male and 511 (47%) female students. These samples equivalently majored in various professional fields; 183 (20%) from Engineering School, 203 (23%) from Business School, 190 (21%) from Nursing School, 155 (17%) from Design School, and 170 (19%) from other fields.

Instruments

The research data were collected by using the following three instruments: (*i*) The Positive Thinking Questionnaire adopted from Ingram & Wisnicki's research (1988) was employed to measure the status of positive thinking. The questionnaire with 22 items

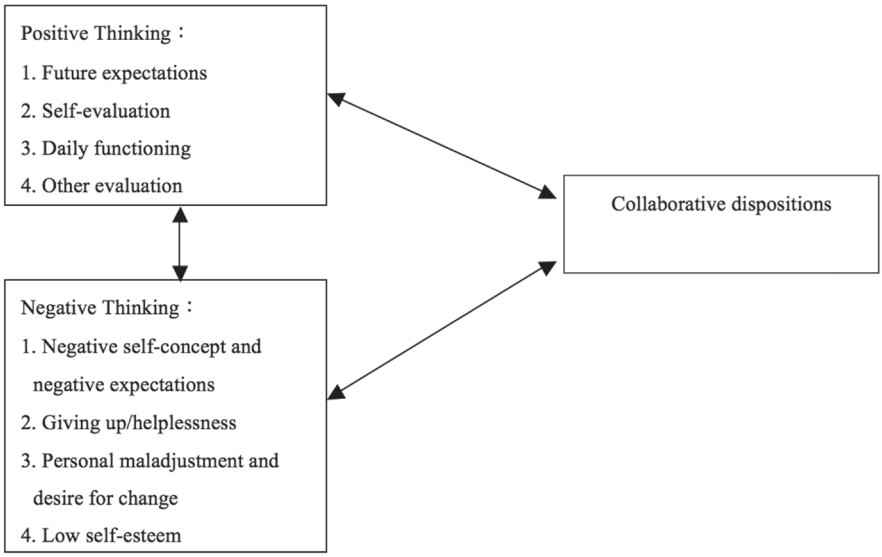


Figure 1.
Conceptual Framework

regarding Positive Thinking questions consisted of four major domains of positive thinking styles, such as daily functioning (5 items; for example, I am in a great mood.), future expectations (7 items; for example, My future looks bright.), self-evaluation (6 items; for example, I have many good qualities.), and other evaluation (4 items; for example, I am respected by my peers.), which using a five-point Likert's Scale and ranging from 1 (highly disagree) to 5 (highly agree). This instrument was validated with the reliability of α = .94 for whole instrument and the magnitude of correlations ranged from .42 to .75 for each item (Ingram & Wisnicki, 1988; Moehead et al., 2008). (*ii*) The Negative Thinking Questionnaire (Hollon, Kendall, & Lumry, 1986; Safren et al., 2000;with 25 items consisted of four domains, such as negative self-concept (10 items; for example, I've let people down.) and negative expectations, giving up/helplessness (7 items; for example, I'm so disappointed in myself.), personal maladjustment and desire for change (5 items; for example, I wish I were somewhere else.), and low self-esteem (3 items; for example, My life is a mess.), by using the 5-point Likert's scale (1=very wrong (unlike me) to 5= very much (like me)). This instrument was also approved with the high level of internal consistency including coefficient alpha of α =.96 and Spearman-Brown coefficient of .94 (Hair, Black, Babin, & Anderson, 2009; Safren et al., 2000). Most of the individual item-total score correlations were additionally approved to be in the moderate to high range (.09 to .81). (*iii*) The Collaborative Dispositions Questionnaire (Wang, 2001)with 11 items, such as "I enjoy sharing various information with my friends for mutual achievement", was also used to measure the collaborative dispositions through self-rating process by using the 5-point Likert's scale (1=highly disagree to 5=highly agree). This instrument was validated to possess high reliability for whole instrument (α = .90) with .51~ .79 for each item.

Data Collection

The questionnaire survey was employed from selected 6 universities. Researchers talked to selected participants (200 college students in each university) face-to-face in the classrooms, with receiving the instructors' permission to collect data before their lectures, to obtain participants' understanding and full cooperation in providing frank answers. All selected participants (N=1,200) finished the survey within two months and only the questionnaires with complete answers (N=901) were used as valid data for the consequent statistics in this study.

Data Analysis

The SPSS 17.0 software for Windows was used to evaluate the descriptive statistics, exploratory factor analysis, and demographic analysis of the respondents. The LISREL 8.80 for Windows was also

used to take a two-step approach for the structural equation modeling (SEM) analysis. This study took a two-step approach to assess and evaluate the SEM (Anderson & Gerbing, 1988). First, the proposed model was examined by using both confirmatory factor analysis (CFA) to assess the effectiveness of the measurement model and SEM to examine the structural model. An attempt was made to closely examine the measurement model and assess the quality of the measurement model by testing the model fits, composite reliability, and convergent and discriminant validity among positive thinking, negative thinking, and collaboration. Secondly, the SEM analysis was taken to estimate all of the SEM parameters by using the maximum likelihood method. The direction and significance of the relationships were determined by simultaneously testing all of the hypotheses.

Results

Measurement Model

A series of analyses on the reliability and validity of instruments were conducted to validate the measurement model. The Chi-square (χ^2) of the measurement model was 694.75 with 146 degrees of freedom (p<0.001), indicating that the measurement model did not fit well with the sample data. However, several other indices, including the χ^2/df (4.76), the goodness of fit index (GFI; 0.92), the adjusted goodness of fit index (AGFI; 0.84), the normed fit index (NFI; 0.98), the non-normed fit index (NNFI; 0.98), the comparative fit index (CFI; 0.98), the incremental fit index (IFI; 0.98), the root mean square error of approximation (RMSEA; 0.066), the expected cross-validation index (ECVI; 0.90), the critical N (CN; 247), and the standardized root mean square residual (SRMR; 0.07) all ensured an accurate assessment of this measurement model. Based on all of these indices, the measurement model was reasonably to be accepted and fitted the sample data well (Hair et al., 2009).

Reliability and Validity

The statistic results illustrated the factor loadings, t values, average variance extracted, and composite reliabilities for the variables (Table 1). All composite reliability values in this study exceeded 0.60, demonstrating the high internal consistency of the latent variables (Hair et al., 2009). Most factor loadings (14/19) exceeded 0.71 with significance (t>1.96, p<0.05), providing evidences of convergent validity. Moreover, convergent and discriminant validity were evaluated by using the average variance extracted (AVE). On the basis of the test's criterion, each value of AVE should exceed 0.50 (Bagozzi & Yi, 1988). In this study, all of the AVEs exceeded the threshold of 0.50, which indicated that this study had adequate levels of convergent and discriminant validity. Additionally, all of the inter-correlations between pairs of constructs were less than the square root of the AVE estimates of the two constructs and thus provided discriminant validity (Table 2) (Hair et al., 2009). According to these assessment indices, these three instruments under this measurement model possessed acceptable reliabilities and validities.

Table 1.
Factor Loadings, t Values, Average Variance Extracted and Composite Reliability of the Measurement Model

Variables	Factor Loadings	T value	AVE*	CR**
Positive-Think			0.64	0.87
P-Think1 (Daily functioning)	0.79	26.75		
P-Think2 (Future expectations)	0.82	28.29		
P-Think3 (Self-evaluation)	0.83	28.74		
P-Think4 (Other evaluation)	0.75	24.69		
Negative-Think			0.78	0.93
N-Think1 (Negative Self-Concept)	0.82	28.98		
N-Think2 (Negative Expectations, Giving Up/Helplessness)	0.90	33.97		
N-Think3 (Personal Maladjustment and desire for change)	0.94	36.07		
N-Think4 (Low Self-Esteem)	0.87	31.79		
Collaboration			0.55	0.93
C1	0.66	21.55		
C2	0.67	21.81		
C3	0.68	22.20		
C4	0.69	22.54		
C5	0.75	25.67		
C6	0.64	20.64		
C7	0.81	28.61		
C8	0.79	27.68		
C9	0.82	29.28		
C10	0.84	30.16		
C11	0.78	26.92		

*AVE: Average variance extracted=$(\Sigma\lambda^2) / [\Sigma\lambda^2 + \Sigma(\theta)]$

**CR: Composite reliability= $(\Sigma\lambda)^2 / [(\Sigma\lambda)^2 + \Sigma(\theta)]$ (Jöreskog & Sörbom, 1996)

Table 2.
Correlation Matrix of the Latent Variables

Latent Variable	Positive-think	Negative-think	Collaboration
Positive-Think	0.80		
Negative-Think	-0.61	0.88	
Collaboration	0.58	-0.43	0.74

Diagonal values indicated the square root of average variance extracted of each construct.

Structural Model 1

The goodness-of-fits of the structure model, including the GFI, AGFI, NFI, NNFI, CFI, ECVI, CN, SRMR, and RMSEA, were also assessed in this study to identify the structure model fitness within variables (Jöreskog & Sörbom, 1996; McDonald & Ho, 2002). In this study, the χ^2 test (χ^2=694.75, df=146, p<0.001) could not determine the goodness-of-fit of the model, that could be owing to the effect of the large sample size (Anderson & Gerbing, 1984). Nevertheless, other statistic results, including χ^2 /df (4.76), GFI (0.92), AGFI (0.90), NFI (0.98), NNFI (0.98), CFI (0.98), IFI (0.98), ECVI (0.90), CN (247), SRMR (0.042), and RMSEA (0.066), indicate an acceptable fit of the structural model (Table 3).

The results of SEM analyses indicated that positive-think positively, directly, and significantly influenced collaboration (γ_{11}=0.51, t=10.47, p<0.001) (Figure 2); thus, the Hypothesis 1 was accepted. On the other hand, the negative think negatively, directly, and significantly impacted collaborative dispositions (γ_{11}=-0.12, t=-2.80, p<0.01); thus, the Hypothesis 2 was accepted. In addition, the positive thinking negatively and significantly had an impact on negative thinking (γ_{11}= - 61, p<0.01). This finding also accepted the Hypothesis 3.

Structural Model 2

In order to further understand the relationships between collaboration and each domains of positive/negative thinking styles, the structural model was proposed and examined (Figure 3). The model statistic indices, including χ^2 /df (4.77), NFI (0.98), NNFI (0.98), CFI (0.97), IFI (0.98), CN (214), and RMSEA (0.066) (Table 4), indicated an acceptable fit of the structural model.

Fit indices: Chi-square / df =4.77, NFI=0.97, NNFI=0.97, CFI=0.97, IFI=0.98, RMSEA=0.066

* PT4: Other evaluation

* NT3:Personal Maladjustment and desire for change

Based on the SEM analysis results (Figure 3), it was identified that the positive thinking domain of Other Evaluation was the only significant factor, among the four domains of positive thinking, to collaborative disposition (γ=0.51, p<0.05). This finding illustrated that individuals with positive evaluation on others could be able and more intended to collaborate with team members.

Table 3.
Overall Model Fitness

Indices	Model fitness	Criteria	Accept	References
Chi-square test				
Chi-square	694.75 (p<0.01)	p>0.05	No	Carmines & MacIver (1981)
Chi-square / df	4.76	<5	Yes	Carmines & MacIver (1981)
Goodness-of- fit indices				
GFI	0.92	>0.9	Yes	Hu & Bentler (1999)
AGFI	0.90	>0.9	Yes	Anderson & Gerbing (1984)
NFI	0.98	>0.9	Yes	Bentler & Bonnett (1980)
NNFI	0.98	>0.9	Yes	Bentler & Bonnett (1980)
Alternative indices				
CFI	0.98	>0.90	Yes	Bentler (1990)
IFI	0.98	>0.90	Yes	Bentler & Bonnett (1980)
RMSEA	0.07	<0.08	Yes	Hu & Bentler (1999)
SRMR	0.04	<0.08	Yes	Hu & Bentler (1999)

In addition, among the four domains of negative thinking styles, only the Personal Maladjustment and Desire for Change (γ= -0.78, p<0.05) was significantly negatively related to collaborative dispositions. This finding obviously demonstrated that individuals could be lack of collaborative dispositions while they were experiencing personal maladjustment and lacking desire to change. The other domains of thinking styles (of both positive and negative thinking) did not significantly demonstrate their effects on collaborative dispositions.

Table 4.
Statistic Results of Model Fitness

Indices	Model fitness	Criteria	Accept	Reference
Chi-square Test				
Chi-square	5629.85 (p<0.01)	*p*>0.05	No	Carmines & MacIver (1981)
Chi-square / df	4.77	<5	Yes	Carmines & MacIver (1981)
Goodness-of-fit Indices				
GFI	0.80	>0.9	No	Hu & Bentler (1999)
AGFI	0.77	>0.9	No	Anderson & Gerbing (1984)
NFI	0.97	>0.9	Yes	Bentler & Bonnett (1980)
NNFI	0.97	>0.9	Yes	Bentler & Bonnett (1980)
Alternative Indices				
CFI	0.97	>0.90	Yes	Bentler (1990)
IFI	0.98	>0.90	Yes	Bentler & Bonnett (1980)
RMSEA	0.066	<0.08	Yes	Hu & Bentler (1999)
SRMR	0.12	<0.08	No	Hu & Bentler (1999)

Figure 3.

Structural Model for Sub-thinking Styles and Collaborative Dispositions

Conclusions and Recommendations

This study was conducted to mainly identify the functional structure among thinking styles and collaborative dispositions through investigating the relationships among various thinking styles and collaborative dispositions. This study conclusively confirmed a significant relationship between positive thinking and collaborative dispositions. Positive thinking is therefore reconfirmed to possess a significant impact on collaborative dispositions for youngsters. As stated in Plowman and McDonough's study (2010), individuals with positive thinking usually recognize their daily functioning, possess future expectations, positively evaluate themselves, and highly evaluate others. Positive perception and personalities, both stemmed from aforementioned positive thinking, are favorable to activate participating motivation and nurture the collaborative dispositions (Mohanty, 2009). Consequently, this study also approved the importance of positive thinking, which was highly associated with collaborative personalities and attitudes, to career success for most employees because of favorite teamwork spirit (Kelly & Barsade, 2001). In addition, positive thinking was confirmed to contradict negative thinking with significance as the finding of Rusting and DeHart (2000).

As the comparable studies conducted by Smith (2001) and Thompson (2004), this study also proved that negative thinking was a destructive factor to youngsters in both collaborative dispositions and positive thinking. This phenomena seems to imply that individuals with negative thinking usually possess negative self-concept and expectations,

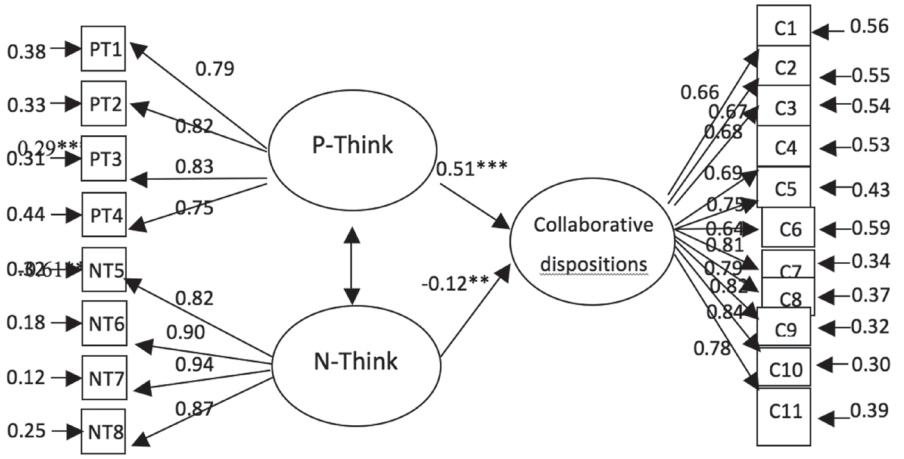
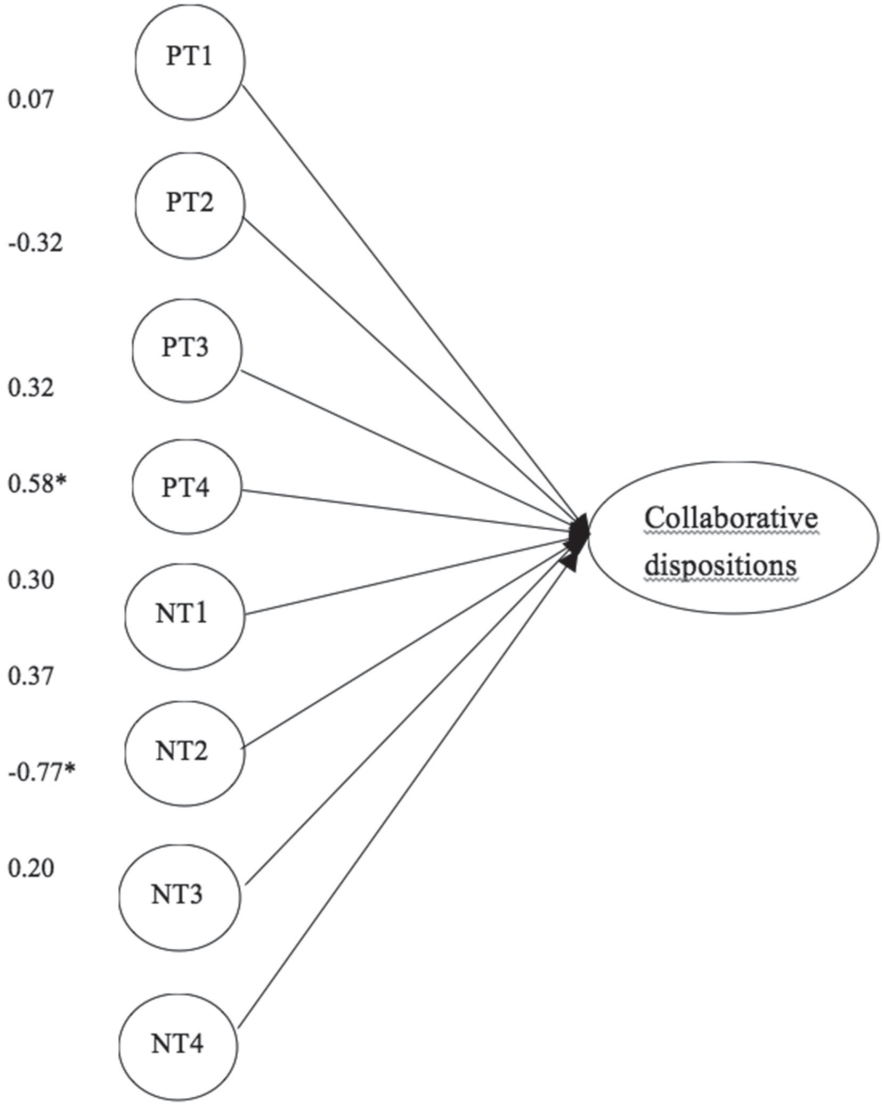


Figure 2 Structural Model

: *p*<0.01, *: *p*<0.001 0.29*** -0.61**



*: $p<0.05$

* PT4: Other evaluation

* NT3: Personal Maladjustment and desire for change

easily give up and feel helpless, difficultly adjust themselves and feel little desire for change, and hold low self-esteem (Danoff-Burg, Prelow, & Swenson, 2004). Attributable to these negative thinking and perceptions, people potentially, even subconsciously, under-evaluate, even distrust, themselves and other partners, and under-estimate the collaboration achievement. These negative thinking and perceptions consequently create a sense of distance, suspicion, alienation and self-estrangement in communities and teams. These negative thinking and depressive perceptions therefore inevitably demolish collaboration motivation and opportunities; what is more, these negative traits are even gradually internalized to be detrimental personalities and derogatory dispositions (Balkis & Isiker, 2005; Chang & Sanna, 2001; Zhang, 2002b).

It is additionally disclosed that the other evaluation factor (i.e. highly evaluating others), among the four domains of positive thinking, was the only

one which creates a significant impact on collaborative dispositions. That is, only the individuals highly evaluating others are willing to and able to collaborate with others well (Tschannen-Moran, 2004). On the other hand, the factor of maladjustment and little desire for change was also identified as the dominant negative thinking which severely eliminates collaborative dispositions. This finding might imply that poor collaboration could originate from a personality of inferior self-adjustment and little desire for necessary changes in teamwork. These two findings seemed to further conclude that active collaborative dispositions should be built on constructive thinking styles, with which individuals respect others and well self-adjust for consequent changes based on team collaboration.

In conclusion, collaboration performance becomes increasingly important in a modern business world and education settings. The understanding and efficient cultivation of collaborative dispositions therefore attract many concerns in higher education and competitive organizations. This study approved the structural model of collaborative dispositions and thinking styles, and verified the affirmative impact of positive thinking and the destructive effect of negative thinking on collaborative dispositions. These two opposite thinking styles, contrary to each other, determine individuals' personalities and dispositions, and lead to their various career achievements.

In the critical reexamination to the conclusions aforementioned, some limitations seem exist: First, this study took the self-expression research method and assumed the respondents were frank in answering questionnaires. Additionally, some youngsters might express their expectations rather than realities. Research data obtained through self-expression inevitably moderate research authenticity. Consequently, some alternative research methods, such as qualitative observation and in-depth interview, might be auxiliary employed to better understand this issue. What is more, this study investigated the collaborative dispositions focusing on, might also limiting to, the internal factors such as thinking styles. There might be some external factors, assuming interpersonal relationship and collaborative tasks, should be involved. Future studies are therefore suggested to investigate the contextual factors for more detailed and insight understanding.

References

Anderson, J. C., & Gerbing, D. W. (1984). The effect of sampling error on convergence, improper solutions, and goodness-of-fit indices for maximum likelihood confirmatory factor analysis. *Psychometrika, 49*, 155-173.

Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin, 103*(3), 411-423.

Arani, M. R. S. (2001, July). *School-based in-service teacher training in Japan: Perspectives on teachers' professional development*. Paper presented at 11th Annual Meeting of the World Congress of Comparative Education Societies, Cheongiv, Korea.

Austin, K., & Cilliers, F. (2011). The psychometric relationship between career thinking and salutogenic functioning amongst unemployed adults. *SA Journal of Industrial Psychology/SA Tydskrif vir Bedryfsielkunde, 37*(1), 969-080.

Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science, 16*, 74-94.

Balkis, M., & Isiker, G. B. (2005). The relation between thinking styles and personality types. *Social Behavior and Personality: an international journal, 33*(3), 283-294.

Baker, K. (2009). Understanding the dialectic relationship between intra and inter-organizational cooperation. In J. Salmons, & L. Wilson (Eds.), *Handbook of research on electronic collaboration and organizational synergy* (pp. 695-709). Hershey, PA: Information Science Reference.

Ben-Ze'ev, A. (2000). *The subtlety of emotions*. MIT Press.

Boddy, D., Macbeth, D., & Wagner, B. (2000). Implementing collaboration between organizations: An empirical study of supply chain partnering. *Journal of Management Studies, 37*(7), 1003-1018.

Cahill, S. M., & Mitra, S. (2008). Forging collaborative relationships to meet the demands of inclusion. *Kappa Delta Pi Record, 44*, 149-151.

Chang, E. C., & Sanna, L. J. (2001). Optimism, pessimism, and positive and negative affectivity in middle –aged adults: A test of a cognitive and affective model of psychological adjustment. *Psychology and Aging*, *6*(3), 524-531.

Danoff-Burg, S., Prelow, H. M., & Swenson, R. R. (2004). Hope and life satisfaction in black college students coping with race-related stress. *Journal of Black Psychology, 30*, 208-228.

Dahl, A. D., Austin, R. K., Wagner, B. D., & Lukas, A. (2008). The relationship between negative career thoughts & emotional intelligence. *The Canadian Journal of Career Development, 7*(1), 4-10.

Demir, K. (2008). Transformational leadership and collective efficacy: the moderating roles of collaborative culture and teachers' self-efficacy. *Egitim Arastirmalari - Eurasian Journal of Educational Research, 33*, 93-112.

De Bono, E (1991). *Teaching thinking.* Harmondsworth Middlesex: Penguin Books.

Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist, 56,* 218-226.

Grigorenko, E. L., & Sternberg, R. J. (1997). Styles of thinking, abilities, and academic performance. *Exceptional Children, 63*(3), 295-312.

Green, V. A., & Rechis, R. (2006). Children's cooperative and competitive interactions in limited resource situations: A literature review. *Journal of Applied Developmental Psychology*, *27*(1), 42-59.

Hager, P., Sleet, R., Logan, P., & Hooper, M. (2003). Teaching critical thinking in undergraduate science courses. *Science & Education,12*(3) 303-313.

Hair, F. J., Black, W. C., Babin, B. J., & Anderson, R. E. (2009). *Multivariate data analysis: A global perspective* (7th ed.). New York: Macmillan.

Haller, C. S., & Courvoisier, D. S. (2010). Personality and thinking style in different creative domains. *Psychology of Aesthetics, Creativity, and the Arts, 4*(3), 149-160.

Hollon, S. D., Kendall, P. C., & Lumry, A. (1986). Specificity of depressotypic cognitions in clinical depression. *Journal of Abnormal Psychology, 95,* 52-59.

Ingram, R. E., & Wisnicki, K. S. (1988). Assessmeno of positive automatic cognition. *Journal of Consulting and Clinic Psychology, 56*, 898-902.

Inkpen, A., & Tsang, E. (2005), Social capital networks, and knowledge transfer. *Academy of Management Review, 30*, 146-165.

Jöreskog, K. G., & Sörbom, D. (1996). *LISREL 8: User's reference guide*. Chicago: Scientific Software International.

Jones, A. (2006). Multidisciplinary team working: Collaboration and conflict. *International Journal of Mental Health Nursing, 15*(1), 19-28.

Kelly, J. R., & Barsade, S. G. (2001). Mood and emotions in small groups and work teams. *Organizational Behavior & Human Decision Processes, 86*, 99-130.

Koskinen, L., Tossavainen, K. (2003). Characteristics of intercultural mentoring-a mentor perspective. *Nurse Education Today*, *23*(4), 278-285.

Lawson, H. (2003). Pursuing and securing collaboration to improve results. In M. Brabeck & M. Walsh (Eds.), *Meeting at the hyphen: Schools-universities-communities professions in collaboration for student achievement and well being* (pp. 45-73). Chicago: University of Chicago Press.

Lane, K. L., Givner, C. C., & Pierson, M. R. (2004). Teacher expectations of student behavior: Social skills necessary for success in elementary school classrooms. *Journal of Special Education*, *38*(2), 104-110.

Lane, K. L., Pierson, M. R., & Givner, C. C. (2004). Secondary teachers' views on social competence: Skills essential for success. *Journal of Special Education*, *38*(3), 174-186.

Lustig, D. C., & Strauser, D. R. (2002). The relationship between sense of coherence and career thoughts. *Career Development Quarterly, 51*, 2-11.

McDonald, R. P., & Ho, M. R. (2002). Principles and practice in reporting structural equation analyses. *Psychological Methods, 7*(1), 64-82.

Mesmer-Magnus, J. R., & DeChurch, L. A. (2009). Information sharing and team performance: A meta-analysis. *Journal of Applied Psychology c 2009 American Psychological Association*, *94*(2), 535-546.

Moyers, T. B., Miller, W. R., & Hendrickson, S. M. L. (2005). How does motivational interviewing work? Therapist interpersonal skill predicts client involvement within motivational interviewing sessions. *Journal of Consulting and Clinical Psychology*, *73*(4), 590-598.

Moehead, A, Barraclough, F., & Alavi, C. (2008). *A positive approach to the care of the older person: Final report*. Lismore, NSW.

Mohanty, M. S. (2009). Effects of positive attitude on earnings evidence from the US longitudinal data. *Journal of Socio-Economics, 38*, 57-371.

Pogrow, S. (2009). Teaching content outrageously: Instruction in the era of on-demand entertainment. *Phi Delta Kappan, 90*, 379-383.

Plowman, N., & McDonough, M. (2010). *Seven factors of effective team performance*. Retrieved from http://www.brighthub.com/office/project-management/articles/62415.aspx.

Rusting, C. L., & DeHart, T. (2000). Retrieving positive memories to regulate negative mood: Consequences for mood-congruent memory. *Journal of Personality and Social Psychology*, *78*, 737-752.

Rubin, H. (2002). *Collaborative leadership: Developing effective partnerships in communities and schools.* Thousand Oaks, CA: Corwin Press Inc.

Safren, S. A., Heimberg, R. G., Lerner, J., Henin, A., Warman, M., & Kendall, P. C. (2000). Differentiating anxious and depressive self-statements: Combined factor structure of the anxious self- statements questionnaire and the automatic thoughts questionnaire-revised. *Cognitive Therapy and Research, 24*(3), 327-344.

Sasson, R. (2011). *Positive thinking*. Retrieved from http://www.positivethinking.co.in/tag/ positive- thinking.

Scherer, K. R., Schorr, A., & Johnstone, T. (2001). *Appraisal processes in emotion: Theory, methods, research*. Oxford, UK: Oxford University Press.

Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist, 55*, 5-14.

Sergiovanni, T. J. (2004). Balance individual autonomy and collaboration to center on students. *Education Digest: Essential Readings Condensed for Quick Review, 70*(3), 17-22.

Smith, K. A. (2001). *Collaboration in learning and design*. University of Minnesota.

Soan, S. (2006). Multi-agency working: Are the needs of children and young people with social, emotional and behavioral needs being served within a multi-agency framework. *Support for Learning*, *21*(4), 210-215.

Trickey, S., Topping, K. J. (2006). Collaborative philosophical enquiry for school children: Socio-emotional effects at 11 to 12 years. *School Psychology International, 27*(5), 599-614.

Tschannen-Moran, M. (2001). Collaboration and the need for trust. *Journal of Educational Administration, 39*(4), 308-331.

Tschannen-Moran, M. (2004). *Trust Matters: Leadership for successful schools.* San Francisco: Jossey-Bass.

Tschannen-Moran, M., Parish, J., & DiPaola, M. F. (2006). School climate and state standards: How interpersonal relationships influence student achievement. *Journal of School Leadership, 16,* 386-415.

Thompson, J. C. (2004). Effects of cooperative learning on achievement of adult learners in introductory psychology classes. *Social Behavior and Personality, 32*(2), 139-145.

Tugade, M. M., Fredrickson, B. L., & Barrett, L. F. (2004). Psychological resilience and positive emotional granularity: Examining the benefits of positive emotions on coping and health. *Journal of Personality*, *72*(6), 1161-1190.

Wang, J. C. (2001). *Team leadership and team efficiency: Moderating effects of internal factors.* Master's thesis of National Taiwan University, Taiwan, Taipei.

Wilkinson, S., & Kitzinger, C. (2000). Thinking differently about thinking positive a discursive approach to cancer patients talk. *Social Science and Medicine, 50,* 797-811.

Williams, S., Zainuba, M., & Jackson, R. (2003). Affective influences on risk perceptions and risk intention. *Journal of Managerial Psychology, 18*(1), 126-137.

Zhang, L. F. (2002a). *Measuring thinking styles in addition to measuring personality traits? Personality and Individual Differences*, *33*, 445-458.

Zhang, L. F. (2002b). *Thinking styles and Big Five personality traits. Educational Psychology*, *22*(1), 17-31.

Zhang, L. F. (2006). Thinking styles and the big five personality traits revisited. *Personality and Individual Differences, 40*, 1177-1187.

Zurita, G., & Nussbaum, M. (2004). MCSCL: mobile computer supported collaborative learning. *Computers & Education, 42*(3), 289-314.