

Research Focus of Emotional Conflict Adaptation: A Visual Analysis of CiteSpace Based on Web of Science Database

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Abstract: Using 618 literatures from 2012 to 2022 in Web of Science database as original data, the knowledge mapping tool CiteSpace 5.8.R3 was applied. Draw the keyword co-occurrence map, keyword emergence map and keyword time zone map of emotional conflict adjustment in psychological research, and dig out the journals with high academic influence, authors and literatures on emotional conflict adjustment, as well as the hot issues and frontier trends in different periods. The status quo, hot spots and evolution trend of the research are reviewed. The results show that in recent ten years, the study of emotional conflict adaptation has focused on anxiety and children, covering attention, stress, perception and individual differences.

Keywords: Emotional conflict adjustment, Web of science, Visualization Analysis Based on CiteSpace.

1. Introduction

In real life, people will not only experience cognitive conflict, but also emotional conflict adaptation. Cognitive conflict refers to the psychological conflict or conflict generated when an individual's existing cognitive structure does not match the reality. At present, the commonly used cognitive conflict research paradigms mainly include the stroop paradigm of color naming, the simon paradigm and the flanker paradigm (Eriksen & Eriksen, 1974). Emotional conflict is a direct conflict between emotions caused by the interference of unrelated emotional stimuli to the current cognitive task, or by the simultaneous existence of two opposite emotions (Zhang, 2020). In recent years, based on the study of cognitive conflict, the study of emotional conflict has developed rapidly. The conflict adaptation effect manifests itself as a series of trials in a consistency task in which the subject's experience of conflict in the previous trial leads to better conflict resolution in the current trial. Currently, the commonly used cognitive conflict research paradigms mainly include the stroop paradigm of color naming, the simon paradigm and the flanker paradigm (Eriksen & Eriksen, 1974). Emotional conflict adaptation is an important cognitive control process in the regulation of human behavior. The ability to identify major emotional conflicts and adjust cognitive resources to improve performance in response to existing emotional conflicts (Dlab & Jsab, 2020).

CiteSpace software system was first developed in 2004, scientific and effective, easy to use, visual effect rich and beautiful, so it is widely used in the field of information science at home and abroad. The software system, developed by Dr. Chaomei Chen, a Chinese scholar from the School of Information Science and Technology of Drexel University in the United States, is an information visualization software for measuring and analyzing scientific literature data, which can be used to draw the knowledge map of science and technology development and visualize the information panorama of the field of scientific knowledge. Identify key literature, research hotspots and frontier directions in a certain scientific field

(Hou & Hu, 2013).

In this paper, a new visual literature analysis method is introduced. The literature on emotional conflict adaptation collected in the Web of Science database in the past 10 years is used as the original data, and the knowledge graph in the field of CiteSpace5.8. R3 is used to clarify the current development, research status and trend of emotional conflict adaptation. It provides a reference basis for further research in this field in the future.

2. Method

2.1 Data Sources

This paper collected literatures from web of science, selected "emotional conflict adjustment" as the theme keyword, and the research direction was psychology. The index dates were 2012-01-01 to 2022-12-31, and a total of 618 literatures were searched.

2.2 Research Tool

This paper uses the 5.8.R3 version of CiteSpace software for analysis. This software is an information visualization software developed with Java language and can be used for visual literature analysis. It is mainly based on co-citation analysis theory and path Finder algorithm to measure literatures in specific fields. In order to find out the key path and knowledge inflection point of the evolution of the subject domain, and form the analysis of the potential dynamic mechanism of the subject evolution and the detection of the frontier of the subject development through the drawing of a series of visual maps, it can show the development trend and trend of a subject or knowledge domain in a certain period of time (Chen et al., 2015). This software is a scientific research tool developed by Chen Chaomei, professor of the School of Information Science and Technology of Drexel University and special professor of Dalian University of Technology, which can be downloaded and used on the official website

(Chen, 2006).

3. Visual Analysis based on Citespace

3.1 Citation Journal Analysis

In terms of software Settings, the Time span is selected from January 2012 to December 2022, and the Time Slice is set to be a stage every year. Select Title, Abstract, Author Keywords (DE), Keywords Plus (ID) as the time source. Select Cited Journal as the network node. Select Top 50 data extraction objects. Other options remain in the default state (Chen Chaomei, 2010). After running the CiteSpace.5.8. R3 software, the citation journal map of emotional conflict adaptation was obtained (Figure 1).

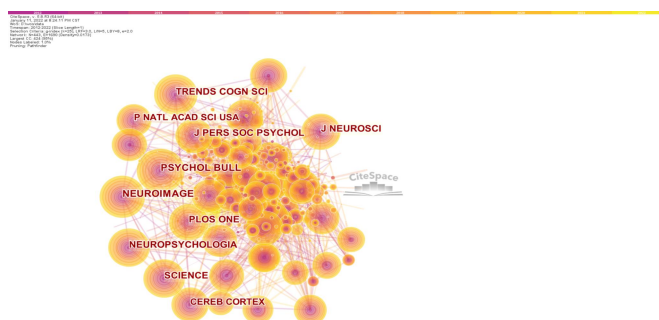


Figure 1: Citation journal Atlas of emotional conflict adaptation

Figure 1 shows the distribution of refereed journals for emotional conflict adaptation Citespace5.8. R3 can drag and scale the position and size of nodes in the graph). Analyzing the research fields of journals can help us deepen our understanding of the subject connotation of emotional conflict adjustment in psychology. In this paper, CiteSpace software is used to take citation journals as an example. The more citations, the greater the influence of the journal on emotional conflict adaptation, and the higher the centrality, the closer the co-citation network between the journal and other journals, and such journals form the basis for the study of emotional conflict adaptation.

Through the analysis of the graph, it can be found that some journals have larger nodes, which indicates that they are in the core position in this field, that is, these journals have higher citation frequency and centrality. There are many larger nodes in the chart, and one of the most representative journals is Psychological Bulletin, a professional journal of psychology sponsored by the American Psychological Association (bimonthly), which was founded by Baldwin to publish evaluative and comprehensive psychological research reviews and research reports. The journal covers a wide range of topics, including emotional conflict adaptation. Since the review is a comprehensive collation of a large number of data, it has a high reference value and citation frequency for new studies. It can be seen that the citation frequency of psychological bulletin is 203 times, and the centrality is 0.02.

3.2 Author Collaboration Map Analysis

The author Collaboration map clearly shows the closeness of the collaboration between the core authors and the authors (see Figure 2). The size of the node represents the number of

published papers by the author. According to the definition of the core author by Price's law, the author with more than 3 published papers in the power domain is the core author, and there are 3 core authors in total. They are Amit Etkin, Jiannong Shi, Artyom Zinchenko and Tongran Liu. The connection and thickness of the authors represent the degree of cooperation and closeness between the authors, among them are Danfeng Li, Tongran Liu and Jiannong Shi, as well as Rudi De Raedt, Marianne Vanderhasselt, Chris Baeken, Rob Luyt Aert and Peter Van Schuerbeek et al. constitute a group of authors, indicating that they have a close cooperation. The darker the line color between nodes indicates the earlier the article was published, and the lighter the color indicates the later the article was published. By looking at the figure, we can also find that the lines of nodes between Rudi De Raedt, Marianne Vanderhasselt, Chris Baeken, Rob Luyt Aert and Peter Van Schuerbeek are relatively dark. This indicates that these authors published their articles earlier. In addition, it can be seen that Natalio Extremera, Christiane Arrivillagay and Lourdes Rey are new research forces.

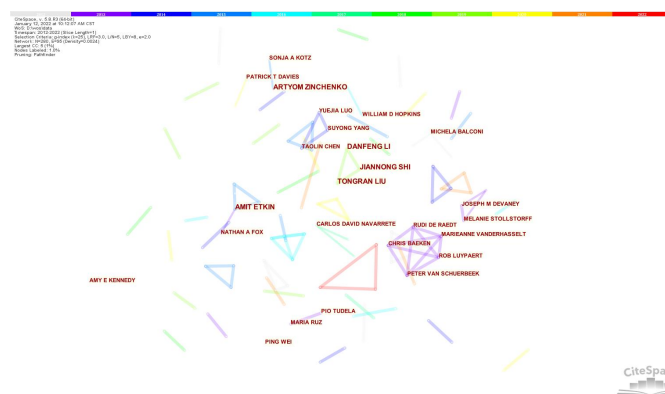


Figure 2: Authorship map

3.3 Analysis of Institutional Cooperation Map

From the font size of the Institutional Collaboration graph, it can be seen that the institutions with more publications are: Harvard university, Columbia university and Penn State university. From the color depth and line thickness, it can be seen that Harvard university, Columbia university, Pittsburgh university and duke university published earlier and were closely related. The lines at Penn State university and Brigham are lighter in color, indicating that the two institutions published their papers later. In addition, it can also be seen from the map that domestic institutions such as Beijing Normal University, Capital Normal University and Chinese Academy of Sciences have published more papers on the topic of emotional conflict adaptation.

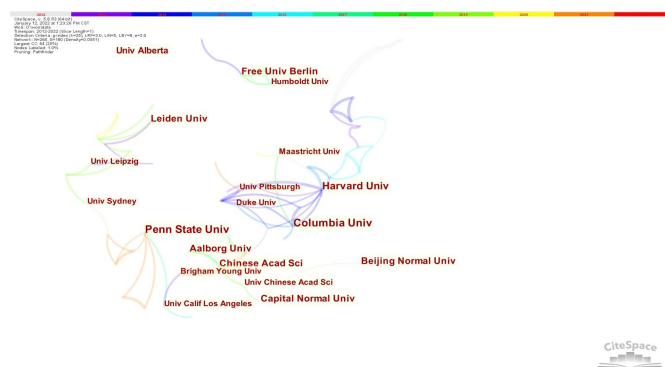


Figure 3: Institutional cooperation map

3.4 An Analysis of the Research Hotspots of Emotional Conflict Adaptation

Keywords are highly summarized and summarized the content of literature research. Through the keyword analysis of literature, this paper can understand the main research hotspots and research themes in this research field, and the establishment of these two points is the core issue of this research field. Research hotspots refer to the most interesting and practical issues that scholars have paid attention to in a period of time. The graphs of word frequency distribution and centrality of key words in literature analyzed by CiteSpace software can be used to explore the development trends, research hotspots and the basic characteristics of the development and change of research frontiers in this field. The higher the frequency of keywords, the more it reflects the focus of the scholars in the research field (such as reflecting the research method in a certain period of time, the urgent problem to be solved or the topic of common interest of the scholars).

This paper selects a co-occurrence word analysis method with keyword as the node type to identify research hotspots. The time span is from 2012-01-01 to 2022-12-31 (currently January 2022), the time slice is set as 1, and the data extraction object is set as Top50. Through the graph analysis of keyword co-occurrence in Figure 4 (drag and drop its nodes to make them more clearly displayed), anxiety, children, attention, stress, perception, and facial expressions can be found expression, behavior and individual difference are important nodes.

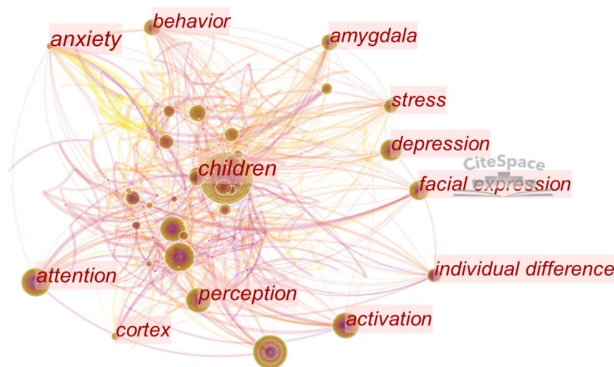


Figure 4: Keyword co-occurrence of scientific knowledge map

The size of nodes in the keyword co-occurrence map represents the frequency of occurrence in the research field, the importance of the location in the studied network structure is expressed by the centrality index, and the thickness of the line is expressed by the co-occurrence map. Generally, nodes with centrality greater than 0.1 indicate that the topic and research direction are in an important position. According to the statistical results of the software (as shown in Table 1), the hot research keywords with centrality greater than 0.1 and frequency greater than 30 are as follows: Conflict, anterior cingulate cortex, cognitive control, Attention, Facial expression (facial expression), Brain (brain), Activation (activation), Depression (depression), Behavior (Perception), Stress (perception), Response (response). Among them, Brain, Facial expression, cognitive control and Attention are all hot keywords. According to the data, Depression is the most central keyword. That is to say, this hot spot is the most

critical position in the study of emotional conflict adaptation and plays an important role (such as liaison and transit).

Table 1: Keywords with centrality greater than 0.1 and frequency not less than 30

Keywords	Count	Centrality	Year
Conflict	92	0.04	2012
Anterior cingulate cortex	56	0.03	2012
Cognitive control	52	0.04	2013
Attention	42	0.07	2012
Facial expression	39	0.05	2012
Brain	36	0.04	2012
Activation	34	0.07	2012
Depression	34	0.08	2013
Behavior	32	0.06	2013
Perception	31	0.07	2013
Stress	30	0.06	2013
Response	30	0.06	2012

The burreport function in Citespace can visually present the keyword emergence map, which can show the sudden increase or decrease of literature related to the research topic, and can reflect the change of research hot spots and topics. The top 12 emergent keywords in the topic of emotional conflict adaptation from 2012 to 2022 include Memory, Mind, Childhood, Social cognition, and Gender Difference, Symptom, Adolescent, Depressive symptom, event-related potential, Family, Social support, Association, these keywords show an explosive research trend in a short time. As can be seen from the figure, the research trend in recent years has shifted to family social factors.

Top 12 Keywords with the Strongest Citation Bursts

Keywords	Year	Strength	Begin	End	2012 - 2022
memory	2012	2.88	2012	2013	█
mind	2012	2.88	2012	2013	█
childhood	2012	3.05	2013	2014	█
social cognition	2012	3.02	2013	2015	█
gender difference	2012	3.56	2014	2017	█
symptom	2012	2.81	2014	2017	█
adolescent	2012	2.87	2016	2018	█
depressive symptom	2012	3.41	2017	2018	█
event-related potential	2012	3.31	2018	2019	█
family	2012	3.27	2018	2019	█
social support	2012	2.8	2018	2019	█
association	2012	2.92	2020	2022	█

Figure 4: Key words emergent atlas

4. Equations

4.1 Summary and Prospect

The Web of science was used to search the cited journals, author cooperation graph, institutional cooperation graph and research hotspots of emotional conflict adaptation literature from 2012 to 2022, and the following conclusions were drawn: First, from the perspective of literature cooperation, publication time and quantity, Amit Etkin, Jianngong Shi, Artyom Zinchenko and Tongran Liu are the main researchers. Chris Baeken, Rob Luypaert, Rudi De Raedt, Peter Van Schuerbeek, and Marieanne Vanderhasselt were among the first authors to collaborate on the paper. Second, in terms of the number, year and cooperation of published papers, the

major research institutions with more published papers include Harvard university, Columbia university and Penn State university, etc. Early authors include Harvard university, Columbia university, Pittsburgh university and duke university, all of which have close ties to each other. Late adopters include Penn State university and Brigham University. Third, from 2012 to 2022, the research focuses on the adaptation of emotional conflict include anxiety, children, attention, stress, perception, and facial expression expression, behavior and individual difference, among which anxiety, children and attention are in an important position. From the keyword burst graph, we can see that the research focus in recent years is family social factors.

4.2 Research Trends and Prospects of Emotional Conflict Adaptation

On the whole, the foreign research literature on emotional conflict adjustment is abundant, rich in content and diverse in theme. At present, the forefront of emotional conflict adjustment is family social factors and neural mechanisms. While domestic research is relatively small, in the future, research institutions in China should strengthen cooperation and open up more valuable new fields of research.

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