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How Innovative are Innovative Research Approaches in the Psychology of the Language Teachers and Learners: A State-of-the-Art Review

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Abstract

The success of language teachers and learners is definitively pertinent to the emotions they experience in academic environments. Accordingly, the factors impacting language teachers' and learners' emotions must be recognized. Many scholars have scrutinized emotional variables in response to this necessity through various methodological approaches. The present study aims to evaluate some of the innovative approaches to assessing emotional factors to see how innovative they are and review their positive points and shortcomings. To do so, Q Methodology (Q), idiodynamic method, Latent Growth Curve Modeling (LGCM), Process Tracing Approach (PTA), Social Network Analysis (SNA), Nested Ecosystem Model (Ecological approach), and Retrodictive Qualitative Modeling (RQM) methods have been selected to be reviewed in this research. The findings highlight several strengths and weaknesses of each of the methodological approaches. It has also been reported that these approaches need to be context-specific and person-sensitive to generate more accurate data. Among the approaches, PTA and SNA have received scant attention in the investigation of emotional factors since the data in these two approaches cannot be reported precisely in narrative form. Our study would be conducive for all researchers, notably those working in the field of language teachers' and learners' psychology.

Keywords: language teachers and learners, positive psychology, research approach, review

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1. Introduction

Teachers and learners are the principal elements of each educational system, and taking their emotions and feelings into account is crucial (Al-Hoorie & Hiver, 2024; Benesch, 2017; Botes et al., 2024; Dendenne & Derakhshan, 2020; Derakhshan, 2022a; Derakhshan & Yin, 2024; Derakhshan et al., 2024; Dewaele & MacIntyre, 2024; Dewaele et al., 2024; Hiver et al., 2024; MacIntyr & Mercer, 2014; MacIntyre et al., 2019; Mercer, 2020). Positive and negative emotions, considered emotional variables, are at the center of second language (L2) education since these emotions have a direct relationship with language learners and teachers' educational situations (Derakhshan, 2022b; Fredrickson, 2001; Li & Dewaele, 2024; MacIntyre & Vincze, 2017; Shakki, 2023; Wang & Derakhshan, 2021a, 2021b). Considering that positive emotions play a crucial role in the ongoing development of teachers and learners, inspiration is believed to lead to better performance and passionate language teaching and acquisition. On the other hand, negative emotions like anxiety and boredom are pivotal in demolishing teachers' and learners' academic lives and can hinder the process of language teaching and learning (Derakhshan, 2022c; Derakhshan & Yin, 2024; Derakhshan et al., 2022; Solhi et al., 2023; Pawlak et al., 2021; Sun & Zhang, 2024; Wang et al., 2021). Accentuating the importance of teachers' and learners' emotions, a prolific body of research has been carried out on the psychology of language teachers and learners, corroborating that this field of study is noteworthy and crucial (Al-Obaydi et al., 2024; Chen & Zhang, 2020; Derakhshan et al., 2021a; 2021b; Henry & MacIntyre, 2024; Hiver & Al-Hoorie, 2020; Horwitz, 2001; Kirkpatrick et al., 2024; Li, 2021; Pourgharib & Shakki, 2024; Solhi et al., 2024; Zhi & Derakhshan, 2024). Regardless of the positivity or negativity of the emotion, assessing this phenomenon, which is dynamic and complicated in essence, can be problematic and troublesome for researchers. As MacIntyre et al. (2019) stated, factors germane to emotions are persistently changing, and different emotional components fluctuate during the interaction between teachers and learners, making emotions complex to examine.

Taking the undeniable role of Positive Psychology (PP) and emotions into consideration, researchers have conducted a considerable body of studies utilizing a variety of research methods (De Costa, 2015; Derakhshan, Wang & Ghiasvand, 2023; Derakhshan, Wang, et al., 2023; Gabryś-Barker & Gałajda, 2014; Horwitz et al., 1986; Li et al., 2023; Oxford, 2016; 2017; Pawlak, 2017; Zhang et al., 2022; Zhi et al., 2024; Zhou et al., 2023). A short glance at the previous studies endorses

applying traditional, monolithic, and linear research methods in investigating emotional factors (Hiver et al., 2022). Measuring emotional variables via those traditional research approaches with such linear lenses seems inadvisable because emotions are contagious, multifaceted, and dynamic (Derakhshan, 2022a; Goetze, 2023; MacIntyre et al., 2020). Being monolithic and single-shot, cross-sectional methodologies may now be considered unsatisfactory, so innovative L2 methodologies must be recognized and examined. Inspired by Complex Dynamic System Theory (CDST), which caters to formulas to scrutinize behaviors and non-linear and multifaceted phenomena, recent studies have been conducted using some innovative approaches (MacIntyre, 2012; Waninge et al., 2024). As a multifaced framework, CDST has its own distinctive aspects: stability, variability, and context. In light of this framework, it can be argued that dynamic systems can be sorted into different stages so as to be self-organized (stability), and these systems can fluctuate (variability) and are context-specific (context). Accordingly, emotional variables, which can change with even a slight variation in context, can safely be investigated using a CDST framework (MacIntyre & Legatto, 2011). In summary, numerous research approaches have been employed to investigate teachers' and learners' emotional variables over the last decades.

Q Methodology (Q), idiodynamic method, Latent Growth Curve Modeling (LGCM), Process Tracing Approach (PTA), Social Network Analysis (SNA), Nested Ecosystem Model (Ecological approach), and Retrodictive Qualitative Modeling (RQM) methods are among the methodological approaches employed by the researchers to investigate emotional variables in the last decades. However, whether these approaches have been adequately innovative is still under question. The PP umbrella provides various topics for researchers to study, and the breadth and depth of materials, instruments, and research approaches are well worth exploring. However, there is a dearth of research investigating innovative research approaches in the psychology of language teachers and learners. Therefore, the present study aims to review recent studies on emotional factors and analyze their L2 research methods and credible innovations. Some of the recent studies conducted through the aforementioned research methods have been clarified and criticized in this study in an effort to address the following research question:

2. Review of the Literature

2.1. Positive Psychology

Over the last three decades, a new branch of psychology, namely PP has garnered the attention of researchers, particularly in the field of teaching and learning second or foreign languages (Benesch, 2017; Derakhshan, 2022b; Dewaele et al., 2019; Fredrickson, 2001; MacIntyre & Mercer, 2014; MacIntyre et al., 2019; Oxford, 2017; Pawlak et al., 2021; Shakki, 2022; Simons & Smits, 2021; Wang et al., 2021; Zare et al., 2023; Zembylas & Schutz, 2016). With roots in the humanistic approach, its primary purpose is to deal with the factors through which individuals and communities can flourish. It is postulated that if teachers and learners perceive, analyze, and develop these factors, they can boost positive features and emotions and overcome negative contextual factors (Gabryś-Barker & Gałajda, 2016). PP includes a wide range of topics with different applications, among which are happiness, well-being, resiliency, gratitude, joy, and interest, to name a few (MacIntyre et al., 2020). According to Peterson (2006), PP has a short history and a long past since it emerged after the election of Martin Seligman as the president of the American Psychological Association in 1998. The pillars of PP began to take shape in the Millennial Issue of American Psychologists during his tenure, with 16 papers focusing on introducing the concept of PP (MacIntyre, 2016). Seligman and Csikszentmihalyi (2000) delineate the concept as follows:

(...) psychologists know very little about how normal people flourish (...). Psychology has, since World War II, become a science largely about healing. It concentrates on repairing damage within a disease model of human functioning. This almost exclusive attention to pathology neglects the fulfilled individual and the thriving community. The aim of positive psychology is to begin to catalyze a change in the focus of psychology from preoccupation only with repairing the worst things in life to also building positive qualities (p. 5).

Moreover, the range of topics reported in MacIntyre (2016) based on Snyder and Lopez (2009) shows the broadness of the PP concept, which is well-recognized nowadays.

Table 1

A Partial List of Topics in Positive Psychology (MacIntyre, 2016, based on Snyder & Lopez, 2009, p. 6)

1. Attachment Security	2. Benefit-finding	3. Character strengths
4. Compassion	5. Courage	6. Curiosity and interest
7. Emotional creativity	8. Emotional intelligence	9. Flow
10. Forgiveness	11. Gratitude	12. Happiness
13. Hope	14. Humility	15. Life longings
16. Love	17. Meaning in life	18. Mindfulness
19. Optimism	20. Optimistic explanatory style	21. Personal control
22. Positive emotions	23. Positive ethics	24. Positive growth
25. Reality negotiation	26. Relationship connections	27. Resilience
28. Self-determination	29. Self-efficacy	30. Self-esteem
31. Self-verification	32. Social support	33. Subjective wellbeing
34. Sustainable happiness	35. Toughness	36. Wisdom

While identifying the topics in PP, researchers noticed that both positive and negative attributes of people are worth pursuing and necessary for a more thorough understanding of the learning and teaching process to flourish (Dörnyei, 2005; Fredrickson, 2013; Gregersen & MacIntyre, 2014; Pawlak et al., 2022). In order to investigate the above-mentioned variables and determine how PP can contribute to the field of second language acquisition, an amalgamation of research approaches utilized during the last decades are explained as follows.

2.2. Research Approaches in Positive Psychology

Simons and Smits (2021) state that emotions act like doorkeepers, assessing what information comes in and goes out of the human mind. Regarding second and foreign language education, the doorkeepers' weapons are more jeopardous because language is either a learning object or a means of communication and instruction. Therefore, individual inadequacies in teaching and learning become more evident to others, which is why emotions play such a pivotal role in second or foreign language teaching and learning (Fredrickson, 2023; Derakhshan & Fathi, 2023, 2024; Derakhshan, Karimpour, et al., 2023a; 2023b). Additionally, emotions can impact the perceptions of teachers and learners by either hindering or boosting the teaching and learning process; therefore, analyzing the emotional factors is of high importance (Derakhshan, Solhi, et al., 2023). Taking the necessity of emotional factors into account, research on the relationship between emotions and education

has considerably increased in recent years (Al-Hoorie, 2018; Csizér, 2017; Derakhshan, 2022b; Derakhshan et al., 2024; Dewaele & MacIntyre, 2024; Khajavy et al., 2021; Pawlak, 2020; Pawlak & Kruk, 2022; Zembylas, 2005). Employing different perspectives and disciplines, researchers have utilized various research methods and approaches to scrutinize emotional variables. Among the innovative research methodologies recently used to study emotional factors, Q methodology, idiodynamic method, LGCM, PTA, SNA, Nested Ecosystem Model (Ecological approach), and RQM methods are revisited in the present paper.

2.2.1. Q Methodology (Q)

Q methodology (henceforth Q) is considered an innovative research approach by which subjective issues (attitudes, ideas, beliefs, and thoughts) can be investigated. This approach, introduced by William Stephenson in the 1930s, enables researchers to peruse human perspectives over time, thereby revealing both the disappearance of certain viewpoints and the emergence of new ideas (Morea, 2022). A set of statements (Q-set) is given to the participants, and they are asked to organize the statements in a specific way based on their point of view, for example, from strongly disagree to strongly agree (Derakhshan, Wang, et al., 2023). This Q-set distinguishes Q from other methodologies and can be generated through different sources such as naturalistic, ready-made, and hybrid (Irie et al., 2018). In the naturalistic method, statements are provided through interactions between the researcher and the participants, in which the participants directly express their statements in the form of interviews, blogs, or diary writings. In the ready-made method, statements are extracted from other reports or questionnaires. The hybrid method is a combination of naturalistic and ready-made statements (Brown, 1980; Ramlo & Newman, 2011). The Q-set prepared from all three methods can then be validated by experts or through a pilot study before running the analysis. Finally, the Q-sort data are uploaded to the software designed for Q-factor analysis, and a by-person correlation of participants is performed. The degree of similarity or difference between the students' viewpoints is interpreted as the correlation coefficients (Watts & Stenner, 2012).

Examples of using a Q include Zheng et al.'s (2020) investigation of the changing motivational profiles of 15 Chinese university students over one and a half years. The participants were concomitantly learning English as a second and Spanish as a third language. The study was based on CDST and aimed to explore

the initial motivation of the Chinese participants in learning the third language and observe the different ways of multilingual self-development. Q-sort tasks were given to the participants three times, and retrospective interviews were conducted to complete the data collection. The results of their study demonstrated that learners with transcultural and translingual orientations tend to become members of the global multilingual community and are more willing to expand their communication repertoire. The findings revealed that instrumental motivation can be decreased despite the gradual development of ideal multilingual selves. As precisely stated in the conclusion of this paper, the authors believe that their outcomes should be interpreted with caution since their sample was too small, which complicates generalizability. They posited that the Q-set utilized in this study was adapted from an L2MSS questionnaire that may have some restrictions, so they recommend conducting mixed-method studies in the future.

In another study, Guerra et al. (2024) applied Q to survey the most vital factors of boosting agency from the university teachers' points of view. This study, part of the four-year Erasmus and Strategic Environmental Assessment (SEA) for Capacity Development in Higher Education in Asia program, introduced a professional agency framework encompassing intrapersonal, environmental, and action domains. Twenty-eight participants from 6 different universities in Southwest Asia cooperated in a problem-based learning program that was designed to enhance the teachers' education sustainable development. The findings of this study indicated that a problem-based learning program can be an acceptable approach to addressing the teacher's societal, professional, and educational challenges. The authors further stated that a pre-Q study is required before using Q methodology to analyze teachers' agency because it is not feasible to conduct such a study before the program has taken place due to changes in the participants' perspective that may occur before and after their involvement in the program.

Additionally, Solhi and Thumvichit (2024) employed Q in their study to examine the English language learners' points of view regarding the sources of willingness to communicate in a Turkish context. The forty undergraduate student participants were registered in an English language teaching program. Considering the participants' perspectives, they were categorized into three groups: self-assured communicators, motivated communicators, and nervous communicators. In the first group (self-assured), the learners showed a high level of self-confidence. The second group (motivated) showed sustained motivation in developing their language skills,

and the third group (nervous) revealed significant types of anxiety that hindered their willingness to communicate. The findings of this study illustrate the diversity of internal and external factors that result in a willingness to communicate. Moreover, teachers are recommended to recognize different motivational strategies to support language learners and encourage them to communicate. Using engaging activities and real-life tasks may also benefit the learners and motivate them to communicate better.

2.2.2. Idiodynamic Approach

Observing individual emotions and feelings during language development requires a more holistic approach. The idiodynamic approach explores intraindividual emotional reactions in self-perception that happen during short episodes (MacIntyre & Ducker, 2022). This approach is a combination of quantitative and qualitative research methods since it has both self-ratings of the affective factors and interviews (MacIntyre & Legatto, 2011). There are typically four stages in this methodological approach. First is the recording stage, where the communication event is recorded. Then, the idiodynamic rating stage allows the participants to rate the recording for the affective state while watching the video. The third stimulated recall stage enables the participants to review and analyze the patterns of ratings and ups and downs in the graph. Finally, in the transcription stage, the whole session is transcribed for further analysis. Applying this approach allows the researchers to capture the dynamicity and stability among the interacting systems and indagate the individual differences apart from group results. It corroborates that the idiodynamic approach emphasizes the process of development rather than the outcomes (Lowie & Verspoor, 2019).

Utilizing the idiodynamic approach in a Japanese context, Ducker (2021) claimed that learners can overcome their language barriers and enhance their willingness to communicate when directly involved in the learning process. Nine students whose English abilities all fell within CEFR-band B1 participated in this study, and their content-based discussions were recorded in 6 short 15-minute intervals. The students were asked to use the idiodynamic software to rate and find the factors influencing their willingness to communicate. Ducker (2021) believes that the participants of this approach need little pre-teaching before being able to elicit the data. It was found that successful learners use some expected methods and task outcome visualization following resetting strategies. The results also showed that the students reported three vital approaches while using the peer-to-peer

strategy: desire for self-improvement, personal reassurance, and rapprochement with peers. Most importantly, the students' tendency to continue this mindset and idiodynamic approach to observe their learning process was reported at the end of this study.

Similarly, Boudreau et al. (2018) conducted a study using an idiodynamic approach to determine the relationship between anxiety and enjoyment among the students of Cape Breton University in Canada. The participants were ten university students who spoke French as a second language and were asked to complete some oral tasks in French. The participants were either called or emailed to bring a photo to discuss in French. There was also a list of questions developed by MacIntyre and Legatto (2011) that were given to the participants so that they could record their answers. For the analysis section, computer software, specifically Anion Variable Tester V2 software, was used to record the students' ratings of enjoyment and anxiety while they watched their own videos (the recorded tasks). The findings demonstrated some convergent and divergent trajectories between enjoyment and anxiety.

2.2.3. Latent Growth Curve Modeling (LGCM)

Previously, longitudinal panel data, including observations on many individuals across several pretests and posttests, was used in behavioral and social sciences (Duncan et al., 2013) with the aim of examining the nature of change over time. These analyses, such as ANOVA or multiple regression techniques, only analyze mean changes and consequently treat differences among individuals as error variance; however, all changes cannot be assessed by only two measurements unless development is known to be linear (Duncan & Duncan, 2004). Consequently, growth curve models were introduced to examine repeated measurements of certain variables in different situations (Potthoff & Roy, 1964). In this regard, LGCM has its roots in both Exploratory Factor Analysis (EFA) and Principal Components Analysis (PCA) by which the covariances can be modeled (Preacher, 2008). It is among the innovative analytical approaches through which human behavior changes like personality traits or academic achievements can be traced and examined. Being one of the subcategories of CDST, this approach is sensitive to initial conditions, and this feature resembles the rudimentary level of each construct (Derakhshan, Wang et al., 2023). LGCM shares the same weaknesses and strengths

concerning statistical methodology since it is conducted utilizing Structural Equation Modeling (SEM). It addresses the following issues:

1. Contrary to traditional methods, the LGCM approach thoroughly explains the relationship between time-dependent variables,

2. Precisely shows the changes and dynamic complexities, and

3. Provides a wide range of research questions for researchers (Voelkle, 2007).

Acknowledging the LGCM, Taherian et al. (2021) conducted a study on 437 Iranian English language learners to examine the subdomain of foreign language enjoyment. The scale used in this study was extracted from Dewaele and MacIntyre (2014) and distributed to the participants in four phases. They used Mplus 8.4 software to analyze the data and reported significant differences across two primary growth curves: intercepts and slopes of private and social foreign language enjoyment. They claimed this approach was a privileged analytical approach for investigating the development of private and social dimensions of foreign language enjoyment.

Similarly, Kruk et al. (2021) conducted a study to explore the co-development of the subdomain of boredom in an online setting in four phases. They aimed to analyze the covariance of the initial level, the slope of the subdomains, and the variation in these subdomains. The 412 participants were first given the revised version of the Boredom in Practical English Classes scale developed by Pawlak et al. (2020). Subsequently, Mplus 8.4 software was used to analyze the data in three stages. The results indicated a dramatic decrease in both subdomains. There was also a negative covariance between the initial and the growth level of each domain. Furthermore, the variances of both levels for each subdomain were accounted for to a great extent.

2.2.4. Process Tracing Approach (PTA)

Compared to qualitative methods or regression-based analysis, PTA seems to open up the black box of causality using small case study methods (Bennett, 2008). There has been considerable confusion in the literature on how this method can be utilized in practice. As Dafoe et al. (2013) stated, PTA intends to go beyond recognizing the correlations between independent variables and outcomes. It involves the observable pieces of evidence through which the researchers reveal the cause-and-

effect link between the independent variable and the study outcomes (Bunga, 2004). For example, taking the statistical correlation between democracy and peace into account, we still do not know how democracy generates more peace or whether democracy is the cause of peace. Finding an answer to these questions requires a method to unpack the causal relationship between these two factors (Dafoe et al., 2013). According to Bennett (2010), PTA evaluates the evidence within a case that leads to supporting alternative explanatory hypotheses. Moreover, this method aims to see whether the processes within the case fit those predicted ones by alternative explanations. Tracing causal mechanism, defined as a complicated system that produces an outcome by the interaction of a number of parts, is an attempt to find the intervening causal processes (Glennan, 2005).

2.2.5. Social Network Analysis (SNA)

Psychology research deals with the complicated interactions between psychological and social factors that influence humans' well-being. Basically, a network is defined as different structures in which nodes represent some variables and the relationships between these nodes are under investigation (Hevey, 2018). In other words, emotional factors, pressure, stress, fitness, and food and drink quality are nodes of the network, and the relationships between those nodes, whether positive or negative, are the edges (Rhemtulla et al., 2016). Networks can be either cross-sectional or longitudinal time series, and they can be done on individuals or groups. Moreover,   a wide range of analytical techniques have been used to scrutinize various network models (Kroeze et al., 2017). Due to the fact that SNA is rooted in the intuitive notion, the social ties between the factors are embedded and have a significant influence on each factor. A network analyst tries not only to uncover a variety of patterns but also to identify the situations under which the patterns change and consequently find the results (Freeman, 2004).

Having been used in psychological sciences, SNA was employed by Cappella and Neal (2012) to examine some structural and rational aspects of classrooms, such as class size, grade level, and teacher support, to find if there is a relationship between these factors and the students' social connections. Social network measures and peer sociometrics were gathered from 418 African American learners. Analyzing the data, the researchers found that several classroom structural factors, such as grade level and relational factors, like teacher emotional support, predicted

network centrality.

Recently, Wang et al. (2024) employed SNA to investigate the interplay between second language burnout, negative emotions, and maladaptive emotion regulation strategies. The 841 Chinese undergraduates participants majoring in foreign languages, engineering, and arts were asked to attend the College English course. They completed three questionnaires online, and SPSS and R Software were used to report the results. The study used emotional exhaustion, anger, cynicism, anxiety, reduced personal efficacy, shame, avoiding, suppression, and venting as nodes. The findings showed that avoidance was the most influential bridging node for burnout, emotional exhaustion, negative emotions, shame, and maladaptive emotion regulation strategies. Concerning the edges, the strongest edge was reported between emotional exhaustion and anxiety. It also claimed that there is a robust bridging association between emotional exhaustion and anxiety. The results of this study indicated that the more the students experience anxiety and shame, the more they face burnout.

2.2.6. Nested Ecosystem Model (Ecological approach)

Because language learning is a dynamic process in which learners encounter fluctuations in their affective constructs, like boredom and enjoyment, researchers have begun to focus on the learning process's personal and contextual components (Heft, 2013). In this regard, there is a prerequisite to utilize an ecological approach enriched with the nested ecosystem model and complex dynamic system theory since they can facilitate the examination of learners' emotional factors. After reviewing previous research methods, it can be corroborated that most studies focus on assessing emotional changes while learning, albeit, in an ecological approach, the interactions between the learners' emotional variables and their environment are also taken into account and provide new perspectives (Li, 2023). On the one hand, we have affective factors, such as anxiety or enjoyment, and on the other hand, ecosystemic variables, like the context of the learning, are scrutinized from the participants' point of view. As Larsen-Freeman (1997) stated, teachers and students and their emotions and perspectives are not the only factors involved in the learning system. Additionally, the chronological and physical characteristics of the learning environment, the ecological context, make up this system.

Bronfenbrenner's (1977, 1979) ecological systems theory is among the most

dominant theoretical frameworks for examining an individual's emotional factors in ecological contexts. He believes that each system has a setting where people can engage in face-to-face interactions. Subsequently, he introduced micro, meso, exo, and macrosystems in his nested ecological systems model. A microsystem is considered a system in which an individual can have a direct role, direct experiences, and direct interactions with others. A person's family has been recognized as one of their microsystems. Regarding the mesosystem nest, two individual settings, such as a parent from a family and a teacher from school, have some interactions. The third or exosystem, within which the mesosystems are nested, can be policymakers who have some influence on individuals; however, individuals do not directly participate. Last but not least, the macrosystem is one in which cultural influences and ideologies have long-term consequences for individuals (Heft, 2013; Neal & Neal, 2013). Later, in 1986, Bronfenbrenner added another core to the previous systems, namely the chronosystem, in which change or continuity across time is accentuated. Examples of a chronosystem can be transitions like moving from middle to high school or the onset of puberty.

Taking the ecological approach into account, Kasbi and Elahi Shirvan (2017) investigated speaking anxiety based on a nested ecosystem model. Some semi-structured interviews were conducted with four intermediate Iranian students over five sessions. After each session, interviews were carried out to check the participants' anxiety. Moreover, observations were recorded to gain contextual information about the learners' anxiety. Finally, a motometer was utilized to take a series of information on the level of anxiety during these five sessions. The data was analyzed based on the nested ecosystem model first at the microsystem level, considering the learners' linguistic factors, affective factors, cognitive factors, motivations, and beliefs. Later, the learners' anxiety in the mesosystem, exosystem, and macrosystem was analyzed, and it was reported that the learners' past experiences, family pressure, institute policies, and passing the university entrance exam were among the reasons for the participants' anxiety.

Subsequently, in a Chinese context, Peng (2012) used Bronfenbrenner's (1979) ecological systems framework to scrutinize the factors influencing willingness to communicate in English as a foreign language learner. There were four Chinese students whose ideas and speech content were qualitatively analyzed. At the microsystem level, six factors were recognized as contributing to the learners' willingness to communicate, including learner beliefs and motivation, cognitive,

linguistic, and affective factors, and classroom environment. The data also suggested the existence of mesosystem factors like the linkages between the classroom setting and the participants' setting, exosystem components in which the links between the classroom setting and the curriculum design or course evaluation criteria are concerned, and the macrosystem constituents such as cultural and educational elements that exerted influence on the classroom willingness to communicate.

2.2.7. Retrodictive Qualitative Modeling (RQM)

Due to the complexity of dynamic systems, selecting a research tool that can accommodate such dynamism may be complicated (Hamish, 2014; Hiver, 2017). Among the proposed methods, modeling can be considered a substantial tool to show changes and movements in complex dynamic systems (Gu, 2023). Researchers employing quantitative modeling in natural and cinematic sciences have used computer-driven models created to analyze the data; however, because of the need for precision in social sciences, quantitative modeling is not sufficient, and further qualitative analyses have been proposed (Elahi Shirvan & Talebzadeh, 2020). As noted by Van Gelder and Port (1995), human cognitive performance is extraordinarily complex and subtle, and human beings react differently in different environments. Therefore, investigating the emotions and behaviors of individuals is challenging for researchers, and they have sought innovative methods to increase the reliability and validity of their studies. Subsequently, Larsen-Freeman and Cameron (2008) indicated that there should be a focus on creating qualitative models that can adequately represent a dynamic system. Following Larsen-Freeman and Cameron (2008), some phases have been used to create a retrodictive model. The first phase establishes the units of analysis, where the researchers need to choose the most relevant and appropriate level of abstraction and units and the exact purpose of their study. The second phase establishes the salient attractor states, which deal with observation and checking the implicit knowledge of the participants through interviews or discussions to identify the outcomes. In the third phase, anchoring the qualitative system model, in which we can anchor our model by using the established outcomes. This means the researchers must build their findings on the fixed model outcomes. In establishing the salient system components phase, a list of components that might have an active role in the system should be set. Although participants may not directly mention these components

during the interviews and data collection, they might have powerful effects. It should be stated that at this stage, the model still lacks dynamism, and nothing about processes has been said. Finally, the fifth stage, establishing the signature dynamics of each system, focuses on identifying different changes and movement patterns called signature dynamics. Following this phase, the results can be generalized to some extent (Dörnyei, 2014; Hamish, 2014).

Having used RQM, Elahi Shirvan and Talebzadeh (2020) conducted a study in an Iranian context on eight teachers and 8 to15 students. They aimed to move backward to find the causes of enjoyment and anxiety in foreign language learners. First, they interviewed the teachers to survey their personal views on their students' enjoyment and anxiety levels. After selecting the archetypes, the teachers chose the students that best fit those archetypes for the second round of interviews. A semi-structured interview was given to the students to check their level of enjoyment (Deweale & MacIntyre, 2014) and anxiety (Horwitz et al., 1986). Further interviews and also narrative frames were applied to finalize the data collection. The findings uncovered some attractors, including having unsuccessful experiences in the past, a perfectionist image of oneself, the effect of the teacher, and personal goals. They also claimed that learners' awareness of these prototypes could alter their emotions, resulting in a more favorable learning process. Moreover, it was found that teachers play a pivotal role in providing an enjoyable environment and abating stress and anxiety in foreign language classes.

Concerning RQM, Hiver (2017) carried out a validation study on language teacher immunity in South Korea. The participants were 44 second-language teachers, educators, and practitioners who were given a prompt to consider the general outcomes of teacher immunity and were asked to list types of L2 teachers they had worked with or met in the past. When finding the archetypes, they were allowed to use their mother tongue (Korean), English, or even a mixture of Korean and English. Besides in-depth interviews, questionnaires such as Teaching self-efficacy, resilience, attitudes, openness to change, classroom affectivity, and coping were used to gather the data. The results indicated the association of teacher immunity with practitioners' emotional, psychological, and cognitive functioning in the second language classroom. Hiver (2017) believed that teacher immunity can be considered a panacea in the field of psychology of teaching and learning. Since emotions are contagious, the more teachers feel immune, the better learners flourish. It was also found that a teacher who aims to foster positive capacities in

the learners must first develop their own capacities and be engaged and immune.

   Each of the above-mentioned methods contributes in its own way to the analyses of psychological and emotional variables, but the investigation of the superiority of one method over the others has received scant attention. Whether these research methods are innovative in the emotional domain is also under question. This paper aims to elucidate the pros and cons of Q, the idiodynamic method, LGCM, PTA, SNA, the Nested Ecosystem Model (Ecological approach), and RQM methods by comparing the positive and negative effects they might have in the studies.

3. Discussion

The present study seeks to discover if innovative L2 methodological approaches in the area of PP and emotional variables are actually innovative. Several widely used methodological approaches of the last decades have been conceptualized and reviewed in our paper, and a critical analysis of their application is reported in the following sections.

3.1. The Advantages of the Methodological Approaches

With regards to Q, as the first approach defined in this study, it is agreed that it gives a holistic investigation of human points of view (Morea, 2022). It is also recognized as a fitting approach for cases where individual perceptions, perspectives, and beliefs are scrutinized (Ramlo & Newman, 2011). Regarding the idiodynamic method, it is stated that this method is a prerequisite to overcoming the ergodicity problem. This means that individuals' emotions and characteristics must be studied individually to avoid the error of generalizing from group results (Boudreau et al., 2018). Moreover, the data extracted from this method includes both stability and dynamicity within each participant (MacIntyre & Legatto, 2011). The variety of data streams that can be generated from this methodological approach is one of the most important advantages of this method. The data can be interpreted from the self-perception view, self-observer, verbal output, non-verbal behavior, etc., illustrating the rapid changes and intraindividual fluctuations in affective states (MacIntyre & Ducker, 2022). Another approach that has gained momentum during the last decades is LGCM, which represents a broad class of statistical methods (Taherian et al., 2024). Among the positive points that make this

methodological approach prominent is the excellent correspondence between the theory and the statistical model. Furthermore, this approach allows both intra and interindividual investigation over time. It has been recognized as an excellent method since it either shows changes or inspects antecedents and consequences of change (Preacher, 2008).

The next methodological approach is PTA, which can be distinguished by the kind of inferences it can make (Bennett, 2008; Waldner, 2015). It has the ability to make inferences about the presence or absence of casual mechanisms in single case studies, while other small-n case studies make some cross-case inferences about casual relationships (Pawlak, 2017). This approach focuses on the workings of the causal mechanisms that contribute to generating an outcome. It goes beyond correlations, aiming to trace the theoretical techniques that link one variable to another (Bennett, 2010). SNA claims to provide an overview of the interactions people might have in a network (Rhemtulla et al., 2016). Additionally, it can be conducive to planning, monitoring, and controlling complex activities since it supplies a vast amount of information on the existing factors and their relationships, the present decision framing, and the exchange of information for progressing adaptation (Freeman, 2014). Having been applied in social sciences, this method can assess the networks' growth over time and find the vital factors to accentuate the opportunities for further interventions (Hevey, 2018).

Reviewing the nested ecosystem model (Ecological approach) with its microsystem, exosystem, mesosystem, macrosystem, and chronosystem layers, it should be noted that all the stages have a continuous effect on an individual's developmental process (Staniczenko et al., 2013). Because this approach deals with living things and their natural environment rather than artificial isolation, it has received significant attention. Moreover, it necessitates the consideration of individual differences and plays a key role in identifying the barriers during the learning process (Neal & Neal, 2013). This model integrates behavioral and environmental changes and gives significance to the interactions between personal and environmental factors. Since learning does not happen in a vacuum, and the learning environment is also an essential constituent of this process, applying this method can be an excellent research method for emotional investigations (Li, 2023). Finally, the last method reviewed in this study was RQM, which involves making inferences about the current situation by moving backward and unearthing the underlying causes (Dörnyei, 2014). This approach can lead to better decision-

making because it can identify trends and patterns based on historical data. It can also be combined with other modeling techniques to increase the accuracy of predictions (Gu, 2023). Table 2 demonstrates a detailed overview of the advantages of each approach.

Table 2
The Advantages of Methodological Approaches

Approach	Advantages
Q Methodology	• is a holistic investigation of human perspectives • appropriate for analyzing an individual's perceptions and beliefs
Idiodynamic Approach	• eliminates the ergodicity problem • has stability and dynamicity • has a variety of data streams • illustrates rapid changes and intraindividual fluctuations
Latent Growth Curve Modeling	• uses a broad class of statistical methods • high correspondence between the theory and the statistical mode • uses both intra and interindividual investigations over time • shows either changes or scrutinizes antecedents and consequences of change
Process Tracing Approach	• produces different types of inferences • focuses on the workings of the mechanisms • traces the theoretical techniques
Social Network Analysis	• analyzes human social interactions • helps in planning, monitoring, and controlling complex activities • assesses the networks' growth over time
Nested Ecosystem Model (Ecological approach)	• links individuals and the environment • integrates behavioral and environmental changes • identifies the barriers during the learning process • gives significance to the interactions between personal and environmental factors
Retrodictive Qualitative Modeling	• makes inferences about the current situation by moving backward and unearthing the underlying causes • better decision-making • identifies trends and patterns based on historical data • 4. can be used in combination with other modeling techniques

3.2. The Disadvantages of the Methodological Approaches

Considering the disadvantages of these methodological approaches, Q seems to have a time-consuming approach to the data collection process, and it needs more cognitive readiness on the participant's part (Morea, 2022). Moreover, the results of the Q analysis cannot be generalized since it only reveals the shared perspectives of the specific participants. Additionally, there is no established procedure for a multiple time points analysis from those same participants (Morea, 2022; Ramlo & Newman, 2011). With respect to the idiodymanic method, it has been found that there are factors that can influence the data's veracity. Factors such as researcher-participant relationships, motivational and cognitive biases, ethical protocols, and appropriate norming or rating scales are among the facets that might affect the accuracy of the data (MacIntyre & Legatto, 2011). Another disadvantage of the idiodynamic method is the amount of data each participant generates. The vast amount of data produced by individuals that need to be summarized and presented in textual form is also challenging for researchers (MacIntyre & Ducker, 2022). The pitfalls of the LGCM approach include the researchers needing at least three time points (three data sets) in a longitudinal study design to shape the growth curve, whether linear or non-linear, to show the time of change, and also to represent the precision and power for studying growth; otherwise, the results are not meaningful (Preacher, 2008). Besides, the transparency around model evaluation and selection of the final method is still under question. According to the analytical method used in the analysis, the model fit can only give readers information about the validity and justification for the selected model. The Bayesian Information Criteria (BIC) or Akaike's Information Criteria (AIC) are also recommended to rank the models' order for model fit comparison, with lower values indicating a better fit (Boscardin et al., 2022).

Causal mechanisms have been recognized as a thorny issue in the social sciences, so PTA can be a good choice in cases where these mechanisms are under investigation; however, this methodological approach has its own challenges (Bennett, 2010). Reviewing the deficiencies of PTA, it has been revealed that there is an insufficient explanation of the logical foundations of the research design or the method (Waldner, 2015). It was also found that identifying processes before tracing them can be a troublesome subject at the beginning of this method. Other problems with this method are that it cannot be reported and presented in narrative form and lacks external validity (Bennett, 2010). In order to increase the validity of this approach, it should be paired

with a cross-case design, which is time-consuming. Last but not least, this method offers no guarantee, and it can either add confidence to or undermine a particular hypothesis (Lorentzen et al., 2017). Although this approach has been introduced as an innovative approach to analyzing emotional variables, little research has been conducted using this methodological approach. While it is neither adequately understood nor rigorously applied in examining emotional factors, it is widely used in political sciences; it should be investigated more in the future (Collier, 2011).

Regarding the SNA, despite SNA having some benefits in social sciences, particularly in investigating emotional variables, there are some key drawbacks. One disadvantage of SNA is the difficulty of making sense of the analyzed data (Oliveira & Gama, 2012). Several interpretations might be generated from the final analysis, especially with large networks, making generalizability complex (Hevey, 2018). Finding the interactions and relationships between individuals and groups in a network can be challenging and time-consuming, so designing the method is critical. This is why it has not been widely used in the investigation of emotional variables, but it can be labeled as an innovative approach for future studies (Neal & Neal, 2013). Likewise, some disadvantages have been found in the next methodological approach, the nested ecosystem model (ecological approach). The first drawback is the generalizability of the data due to the small number of participants (Staniczenko et al., 2013). How the data from fewer than 10 participants can be generalized and reported remains a big question. The second issue is its high vulnerability to confounding, meaning the possibility of masks that disguise or cover true relationships or data (Schielzeth & Nakagawa, 2013). Since systems are intertwined in this model, false data from the participants in one system can affect the whole results and might lead to confusion. Finally, the extent to which these systems can impact and shape human development is not clear and cannot be identified through the data analyses (Li, 2023). The last approach introduced in this study was RQM, which requires a lot of time to build and refine the models (Hamish, 2014). Another disadvantage of this method is the large amount of rich data that is a prerequisite for conducting this method (Gu, 2023). Since RQM is sensitive to quality and quantity, there are some uncertainties in the model predictions, which complicates data analysis. Such a complex interpretation and validation process might also be considered another deficiency of RQM (Dörnyei, 2014). Table 3 displays the possible disadvantages of the approaches for further analysis.

Table 3
The Disadvantages of the Methodological Approaches

Approach	Disadvantages
Q Methodology	• is time-consuming • needs more cognitive readiness • cannot be generalized • has no established procedure for the multiple time points analysis
Idiodynamic Approach	• has some factors which can influence the veracity of the data • huge amounts of data produced by individuals • challenging to summarize and present the data in textual form
Latent Growth Curve Modeling	• requires at least three time points • needs transparency around model evaluation and selection of the final method • needs further criteria to reach a fit model
Process Tracing Approach	• insufficient exposition of the logical foundations of the research design or the method • faces problems in identifying processes before tracing them • cannot be reported and presented in narrative forms • lacks external validity
Social Network Analysis	• has difficulty in making sense of the data analyzed • makes generalizability complex. • is time-consuming
Nested Ecosystem Model (Ecological approach)	• makes generalizability difficult • highly vulnerable to confounding • identifies the barriers during the learning process not at the beginning • has no clear understanding of the extent to which the systems can impact and shape human development
Retrodictive Qualitative Modeling	• requires a lot of time to build and refine the models • has a high amount of rich data • has uncertainties in the model prediction • 4. very complex interpretation and validation process

Tables 1 and 2 show that there is no best or most innovative method since all have certain drawbacks. It also illustrates that approaches must be context-specific and person-sensitive, and due to this specificity, individual traits and emotions should be prioritized rather than group investigations. The emphasis should be on selecting methodological approaches commensurate with the research purpose. Moreover, since emotions are contagious and transmissible, the researcher must

take extreme care in the research procedure so as to extract pure data. More specifically, the innovative approach is one in which several researchers interpret the data to abate ambiguity. To sum up, a research approach can be considered groundbreaking when it takes into account the following factors: context, individual differences, time, validity, reliability, participants' consent and readiness, and precise data procedure and analysis.

4. Conclusion

Our review paper aims to determine if innovative L2 methodological approaches in the area of PP and emotional variables are indeed innovative. The findings showed that while there are many benefits to using these methodological approaches, no approach, method, or tool is perfect, and critique should be taken seriously. This paper will benefit researchers who are skeptical of formulae and mathematical calculations and prefer utilizing qualitative analyses. The nuts and bolts of innovative approaches such as Q methodology, idiodynamic method, LGCM, PTA, SNA, Nested Ecosystem Model (Ecological approach), and RQM methods have been scrutinized and reported, and their pros and cons have been categorized. It seems that PTA and SNA have received scant attention in the area of PP and the investigation of emotional factors; however, researchers have frequently employed the five other approaches. Other research approaches, such as multilevel modeling, time series analysis, panel designs, and experience sampling methods, can be analyzed in future research. Developing a checklist through which the novelty of a method can be assessed is also recommended to researchers who seek to use the best and most innovative approaches in their studies.

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