

Cognitive Dissonance and Persuasive Reasoning: A Psychological Study of Argument Construction in Essay Writing

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Abstract:

This study is a mixed-methods empirical research that explores how cognitive dissonance shapes the argumentative writing of third-year English language learners at the University of Frères Mentouri (Constantine1, Algeria). Anchored in the theoretical frameworks of persuasive reasoning and cognitive dissonance, the research investigates whether intentional exposure to conflicting evidence enables the students to construct persuasive essays. The quantitative analysis of the persuasive essays written by sixty (60) undergraduate EFL learners disclosed significant improvements in the participants' awareness, counterargument integration and overall reasoning capacity when instruction incorporated dissonance-based tasks. The qualitative insights that were obtained from the students' reflective journals corroborated these patterns; they revealed that the learners were, metacognitively, more engaged with their writing, managed emotional discomfort of contradicting reflections, and developed more effective reasoning strategies through complex issues. Together, these findings underscore the cognitive operations that support dissonance and improve argumentative competence. Extending beyond its data-driven contributions, the paper highlights the pedagogical value of integrating dissonance-orientated tasks in writing instruction to bring about critical literacy, intellectual flexibility, and second-order thinking in applied education contexts.

KEYWORDS: Cognitive Dissonance, Persuasive Reasoning, Emotional Discomfort, Persuasive Writing, Counterargument Construction, and Applied education.

1. Introduction

Argumentative writing, which demands evidence collection, logic application, and argument adaptation for a target audience, is

an important element of academic literacy. In EFL settings, in which language learners- all students and particularly advanced EFL ones- who are dealing with the constraints of linguistic resources are involved in cognitively demanding work, this becomes even more difficult (Hyland, 2022). Argument-building is not simply a language activity- at least not an isolated one- but a cognitive act swayed by motivation, prior assumptions and beliefs, in which the speaker deliberately organises what he or she has to say, i.e., the (relevant) data, support and reasoning.

One well-regarded theoretical foundation for improving persuasive reasoning is Festinger's cognitive dissonance theory (Festinger, 1957). It advances that when an individual is confronted with information that is discordant with his convictions or attitudes, he experiences a psychological discomfort. They are, then, motivated to think in ways that reduce this discomfort, which may consist of re-evaluating evidence, rethinking assumptions, or bolstering justifications (Harmon-Jones & Mills, 2019). It was found that purposeful dissonance in writing instruction through the presentation of opposing views or conflicting data supports deeper levels of thinking and development of stronger arguments (Chan & Nussbaum, 2011).

Persuasive writing and cognitive dissonance intersect in an interesting area of study; however, there is not a lot of research that combines these two concepts to study even further, especially in the context of education and second language learners. Educational psychology contends that structured cognitive conflict may increase critical thinking and have substantial changes regarding understanding (Muis et. al., 2020). Thus, more research is needed specific to EFL persuasive writing before we can have certainty in transferring this aspect of development in English. Furthermore, while there are models for writing persuasive arguments, for example, Toulmin's (1958) model for writing persuasive arguments and Walton's (2013) argumentation schemes, as models help scaffold the structure of persuasive writing, they mainly focus on the

structural aspect of writing while less on the emotional and motivation forces, including cognitive dissonance.

This study attempts to address the gaps in practical knowledge of EFL convincing reasoning in essay writing and to assess how cognitive dissonance inducement tasks affect persuasive reasoning skills. A mixed-methods model is utilised to analyse how the students' written arguments can improve and to unpack qualitatively to demonstrate the shifts in their cognitive processes.

2. Review of Related Literature

2.1. Cognitive Dissonance: Conceptual Foundations

Although Festinger's (1957) theory of cognitive dissonance is not the only way to make sense of competing cognitions, it is certainly one of the most significant. Cognitive dissonance theory posits that holding two or more contradictory beliefs, or being discordant in beliefs and behaviour, creates a state of psychological discomfort. This unease is a form of motivation that directs individuals to achieve consonance, which is achieved through changing beliefs, learning new information, or reducing the importance of the inconsistent cognition (Harmon-Jones & Harmon-Jones, 2007). Most educational uses of dissonance theory have focused on cognitive conflict as a trigger for conceptual change (Muis *et al.*, 2020). In writing settings, dissonance can surface when the students are presented with information that clearly opposes their preexisting knowledge or attitudes. Efficacious instruction, in such situations, does not ignore the conflict; it channels this discomfort into a deeper involvement with the input and a more refined argument development.

2.2. Persuasive Reasoning in Academic Writing

In academic essay writing, good reasoning involves weaving together claims, evidence, and warrants into cohesive arguments (Toulmin, 1958; and Toulmin, 2003). This is further complicated in L2 context by the necessity to juggle between linguistic accuracy and critical thinking (Hyland, 2022). Studies carried out in the field of

Applied Linguistics have consistently found that inexperienced writers are reluctant to counterargue (Lau and Chan, 2003) because they see it as being complicated to incorporate the other side's perspective (Nussbaum & Kardash, 2005). Yet, exposure to structured opposition can lead to better-quality arguments, especially when learners are prepared to anticipate and counterargue opposing positions (Stapleton & Wu, 2015). This is consistent with the definition of Walton (2013) argumentation schemes and the importance of critical reasoning with competing viewpoints that he considers to be a characteristic of good persuasive reasoning.

2.3. Connecting Cognitive Dissonance and Persuasive Writing

Despite the ubiquitous research on cognitive dissonance in social psychology, its role in academic writing, particularly in L2 persuasive writing, remains under-researched. Chan and Nussbaum (2011) found that when university students are forced to argue for a side they disagree, they produced a more nuanced essay. This may be because dissonance reflection can bring in a richer reasoning pattern. The process is unambiguous: when learners find evidence that contradicts their belief, they experience dissonance; and to minimize it, they must then reconcile contrary claims, typically by thinking more critically about the evidence and reasoning more deeply. In that sense, cognitive dissonance is not only a motivator, but also a cognitive organizer, in the sense that it helps include counterarguments and develops more balanced argumentative structures.

2.4. Applied Education Perspectives

Educational settings need careful planning to incorporate dissonance during writing instruction. Vygotsky's (1978) sociocultural theory explains that learning happens through the zone of proximal development (ZPD) which describes the difference between student abilities without assistance and their abilities with guidance. The implementation of dissonance-based learning activities through collaborative environments with feedback enables

the learners to develop their reasoning skills without causing cognitive overload. Research from educational psychology demonstrates that the students become more motivated and better at self-regulation when they experience moderate dissonance through proper instructional support (Muis *et al.*, 2020). The EFL classroom setting could use controversial topics along with structured debates and evidence sets that purposefully show opposing viewpoints.

2.5. Gaps in the Literature

The review identifies three main gaps in the research:

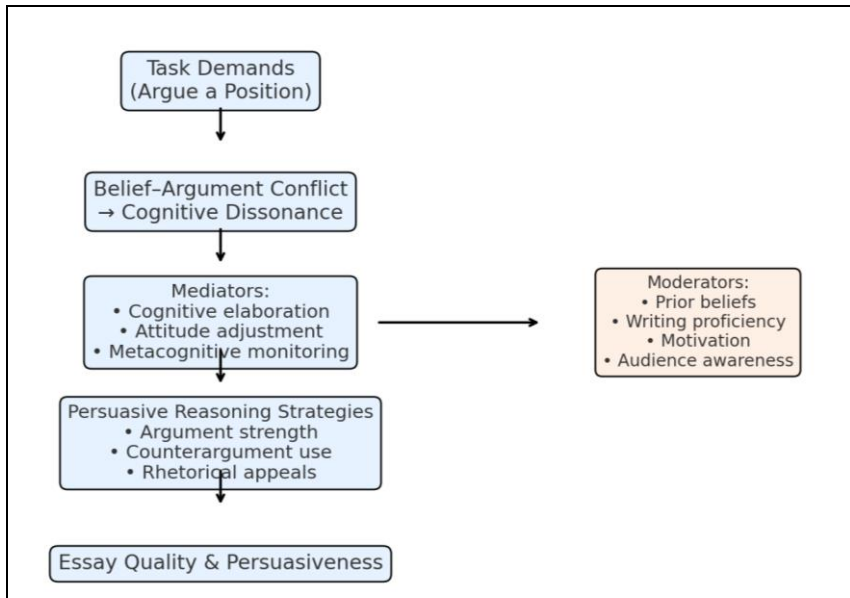
- The amalgamation of cognitive dissonance initiation with L2 argumentative writing instruction has limited empirical studies.
- There is a shortage of research which uses mixed-methods to study both quantitative improvements in writing quality alongside qualitative observations of cognitive processes.
- The educational field has received inadequate attention regarding how structural argumentation frameworks interact with affective-motivational factors in practical educational contexts.

The current study, therefore, attempts to bridge the gap by:

- (a) conceiving writing tasks that are based on dissonance;
- (b) assessing quantitatively their influence on persuasive reasoning;
- and
- (c) investigating students' thoughts qualitatively to better grasp the cognitive and emotional perspectives of argument development.

The conceptual framework for cognitive dissonance effects on persuasive reasoning in essay writing appears in figure 1.

Fig 1. The conceptual framework for cognitive dissonance effects on persuasive reasoning in essay writing



Source: Harmon-Jones & Mills (2019), Cognitive Dissonance: Reexamining a Pivotal Theory in Psychology, American Psychological Association, 52.

3. Methodology

3.1. Research Design

The present study employed a converged mixed-methods design as introduced by Creswell & Plano Clark (2018) who are widely known for developing and popularizing systematic frameworks and practical guidance for mixed-methods designs. In this paper, quantitative and qualitative data were integrated to analyse the influence of cognitive dissonance on persuasive reasoning in academic essay composition. Therefore, the this research seeks to address the following questions:

Main research question

-How does cognitive dissonance influence the construction of persuasive arguments in essay writing?

Research sub-questions

-How does dissonance affect the inclusion of counterarguments and rebuttals?

-What epistemic emotions emerge and how do they shape reasoning?

To answer these questions, the quantitative strand employed standardised rubrics to assess enhancements in argument quality, whilst the qualitative strand examined participants' emotional and cognitive reactions to dissonance-inducing writing activities. In this paper, the two strands are analysed separately and then combined for data interpretation.

3.2. Participants

The research participants were sixty (60) undergraduate EFL students (41 females, 19 males) that have been selected from a population of 315 third-year English language students using a probability sampling. They were enrolled in an Academic Writing course at the Department of the English Language, University of Frères Mentouri (Constantine1, Algeria). Their ages ranged from 19 to 24 years ($M = 21.2$ $SD = 1.3$). All participants have completed at least one prior course in argumentative writing but have not received explicit training in handling counterarguments or cognitive conflict in writing since the study was conducted by the beginning of the second semester (February, 2025).

Table 1. Demographic Characteristics of Participants

Characteristic	n	?
Female	41	68.3
Male	19	31.7
Age 19-20	17	28.3
Age 21-22	33	55
Age 23-24	10	16.7
Years of EFL Study	$M=12.1, SD=1.9$	/

3.3. Instruments

3.3.1. Persuasive Essay Rubric

Adapted from Nussbaum and Kardash (2005), this rubric rated essays on:

- (a) Claim clarity (0–5)
- (b) Evidence integration (0–5)

(c) Counterargument use (0–5)

(d) Overall coherence (0–5)

The essays were anonymised and evaluated thrice by the researcher who has been teaching written expression for twenty (20) years at the same department. The reliability was significantly high (.89).

3.3.2. Dissonance Induction Materials

A set of three controversial topics (use of AI in education, mandatory environmental policies and cultural globalization) was prepared; each one was accompanied by balanced evidence sets including both supporting and opposing viewpoints. Evidence was designed to create a cognitive conflict for students whose pre-task survey responses indicated an initial stance.

3.3.3. Cognitive-Affective Reflection Protocol (CARP)

It is a semi-structured reflection journal that guided participants to articulate emotional reactions to contradictory evidence, reasoning strategies for reconciling differences and perceived changes in stance.

3.4. Procedure

The investigation ran for five weeks by incorporating writing activities in the regular curriculum.

(a) Week 1- Pre-intervention Assessment

Students developed a persuasive essay on an unbiased topic without counterargument prompts (baseline/pre-test)

(b) Weeks 2-4- Implementation Phase

Students received topics that, according to stance surveys, were more likely to trigger cognitive dissonance. Additionally, they were given evidence packets and were instructed to incorporate at least two pieces of conflicting evidence into their work. After

finishing each essay task, students immediately completed their reflection journals.

(c) Week 5 – Post-intervention Assessment

Participants wrote a final persuasive essay on a new topic with embedded conflicting evidence (post-test). Final reflection journals were collected.

Table 2. Study Timeline and Activities

Week	Activity	Data Collected
1	Baseline essay, stance survey	Essay (pre), stance data
2	Topic 1- Dissonance task	Essay, CARP journal
3	Topic 2- Dissonance task	Essay, CARP journal
4	Topic 3- Dissonance task	Essay, CARP journal
5	Post-test essay	Essay (post), final CARP journal

4. Data Analysis

4.1. Quantitative Analysis

Pre- and post-treatment essay scores were compared using paired-sample t-tests to assess improvements in each rubric category. Cohen's d was calculated to measure the magnitude of the intervention's effect. Statistical analyses were conducted in SPSS v29, with $\alpha = .05$. Qualitative Analysis Reflection journal responses were analyzed thematically using Braun and Clarke's (2021) six-phase approach. Initial codes were inductively generated from the data, then organised into themes related to emotional regulation, reasoning adaptation, and stance modification.

Table 3. Pre- and Post-Test Essay Scores by Rubric Category

Rubric Category	Pre-Test M (SD)	Post-Test M (SD)	t(59)	α
Claim clarity	3.12 (0.81)	4.01 (0.64)	-8.41	?.001
Evidence integration	2.85 (0.93)	3.89 (0.71)	-9.13	?.001
Counterargument use	1.92 (0.88)	3.67 (0.74)	-14.27	?.001
Overall coherence	3.05 (0.77)	4.10 (0.65)	-10.12	?.001

As Table 3 indicates it, all rubric categories improved significantly from pre- to post-test, with large effect sizes (Cohen's d ranging from 1.08 to 1.84). The largest gain is clearly observed in "counterargument use" ($d=1.84$). As for the statistical significance of the results, and since a standard alpha level of .05 was used to determine it and given that the calculated value of α (?.001) is inferior to the predetermined one (.05), the deviations are not attributable to chance.

4.2. Qualitative Analysis

Cognitive-affective Reflection Protocol (CARP) Thematic Analysis revealed that participants' journals were scrutinized, and this revealed the following principal themes:

(a) Emotional Discomfort

Catalyst participants, when confronted with contradictory evidence, described their emotional discomfort as "mental pressure," "confusion" or "irritation." Nevertheless, they expressed how these emotions made them more engaged with the topic ("Initially, I experienced frustration; however, I subsequently began to read more attentively to comprehend the reasons behind an opposing viewpoint" Participant 24).

(b) Adaptation of Strategic Reasoning

The respondents indicated a transition from a "one-sided defense" to a more equitable strategy, proactively exploring methods to incorporate counterarguments without undermining their own assertions ("Previously, I refrained from addressing the opposing viewpoint, but now I endeavour to incorporate it to demonstrate the robustness of my argument" Participant 11).

(c) Adjustment of Position and Receptiveness

Although not all participants altered their final positions, numerous individuals reported heightened receptiveness to divergent viewpoints ("I have not altered my stance, yet I now recognise the validity of arguments from both perspectives" Participant 37).

Table 4. Themes and Supporting Evidence from CARP Journals

Theme	Example Quote	?
Emotional Discomfort	"I felt mental pressure to rethink my ideas."	83.3
Adaptation of Strategic Reasoning	"I tried to integrate the other view."	76.7
Adjustment of Position and Receptiveness	"I now see valid points on both sides"	63.3

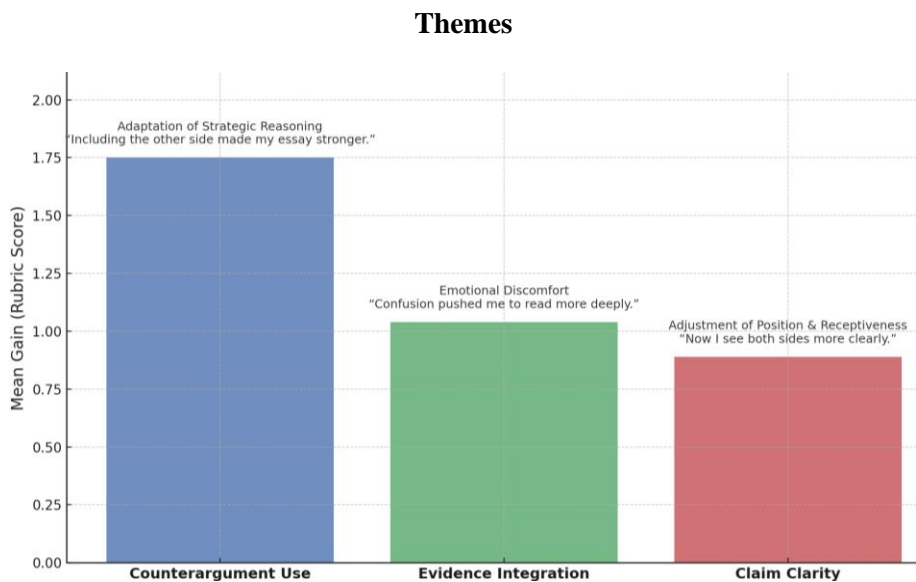
4.3. Mixed-Methods Integration

An integration display (Table 5) lines up quantitative rubric enhancements (mean gain scores) with qualitative themes and illustrative respondents' quotes. This combination reflects a mixed-methods joint display (Creswell & Plano Clark, 2018), using which score improvements are explained and supported by students' reflections. This matrix shows that participants with the largest gains in counterargument use also expressed a more considerable frequency of using strategic reasoning adaptation in their journals.

Table 5. Integration Display of Quantitative and Qualitative Findings

Rubric Improvement	Mean Gain	Related Theme	Illustrative Quote
Counterargument use	+1.75	Adaptation of Strategic Reasoning	“Including the other side made my essay stronger.”
Evidence integration	+1.04	Emotional Discomfort	“Confusion pushed me to read more deeply.”
Claim clarity	+0.89	Adjustment of Position and Receptiveness	“Now I see both sides more clearly.”

The joint display analysis (Figure 2) demonstrates a convergence between quantitative and qualitative findings: the largest quantitative improvements in counterargument use are observed among students who most frequently described strategic adaptation in their journals. This triangulation strengthens the argument for a causal relationship between dissonance-induced reflection and persuasive reasoning gains.

Figure 2. Integration of Rubric Improvements with Cognitive-Affective**(a) Counterargument Use (Mean Gain=+1.75)**

Quantitatively, the highest mean gain implies that learners enhanced their capacity to address counterarguments in writing significantly. Qualitatively, the theme “Adaptation of Strategic Reasoning” indicates participants became more tactical and more aware about the importance of opposing views in enhancing one’s persuasiveness.

(b) Evidence Integration (Mean Gain=+1.04)

Quantitatively, a middling growth indicates that students are more capable of entwining evidence into their reasoning. Qualitatively, one driver emerged: emotional discomfort. Learners were propelled to think more critically when struggling with conflicting/confusing evidence.

(c) Claim Clarity (Mean Gain=+0.89)

Quantitatively, the gain is smaller, still it is meaningful; it indicates more intelligible thesis statements and stands over time. Qualitatively, the theme “Adjustment of Position and Receptiveness” shows that learners polished up their claims as they became more receptive and flexible towards opposing thoughts.

5. Discussion and Analysis of the Results

The current study aims at investigating the role of cognitive dissonance in improving the quality of argument construction in persuasive essay writing among EFL third year university students. A mixed-methods design was used by combining pre- and post-quantitative measures and qualitative journal analysis. The findings strongly support the central proposition that exposure to cognitive dissonance in persuasive writing tasks results in significant improvements in argument construction, especially in the learners’ ability to amalgamate counterarguments. Qualitative data propose that emotional discomfort plays a pivotal role by initiating deeper cognitive involvement, and that strategic adaptation in reasoning brings about these gains.

Quantitative analyses unfolded statistically significant growth across all rubric dimensions- claim clarity, evidence integration, counterargument use, and overall coherence- with considerable effect sizes (Cohen's $d > 1.0$). The most significant gain was made in learners' counterargument use. This lines up with Festinger's assumption that dissonance paves the way for active cognitive work to reconcile conflicting ideas (the learners' reflections and the opposing ideas they encounter while accomplishing the writing task). For this particular instance, the psychological/emotional discomfort of facing opposing opinions seems to have triggered more refined rhetorical strategies for introducing counterarguments into persuasive essays.

Qualitative findings elucidate the mechanism underlying these enhancements. Students experienced primary emotional unease- like frustration, confusion, and mental tension- which, instead of resulting in disinvolvement, functioned as a catalyst for an improved engagement. This aligns with Elliot and Devine's (1994) motivational model of dissonance, which asserts that individuals endeavour to alleviate discomfort by enhancing cognitive effort. This endeavour resulted in more compelling argumentation in academic writing. The correlation between emotional states and reasoning adaption identified here aligns with Pekrun's (2006) control-value hypothesis of achievement emotions, indicating that unpleasant emotions in educational settings may be beneficial if students view the task as manageable and worthwhile.

A central qualitative theme- adaptation of strategic reasoning- mirrors a shift from shielding, one-sided argumentation to combinative, deeper reasoning where counterarguments are addressed and refutes constructively. This is consistent with Kuhn's (1991) developmental work on argumentation, which underscores the transition from absolutist to evaluative epistemologies. The data indicate that cognitive dissonance serves as a scaffold for this epistemological transition in EFL learners.

6. Cross-Cutting Insights

-Cognitive Dissonance as a mechanism: Students' emotional unease and stance modification and openness demonstrate that dissonance experiences like confusion and confronting opposition instigates deeper level reasoning.

-Strategic Growth: Participants have shown a clear mechanical improvement by getting better rubric scores and strategic development by showing a greater capacity to adapt reasoning and balance perspectives.

-Hierarchy of Gains: The most noticeable gains came from the use of counterarguments, implying this was the most onerous yet transmuting skill. The least considerable gain that was linked to claim clarity may reflect that learners already possessed a touchstone of clarity, with a little room for some improvement.

7. Implications for EFL Writing Pedagogy

These findings have several implications from an applied perspective:

-Dissonance as an Instructional Tool: subsuming structured dissonance, like presenting the learners with credible opposing arguments, can be an effective strategy to initiate and improve deeper involvement in argumentative writing tasks.

-Emotionally Supportive Instruction: Echoing Bandura's (1997) self-efficacy framework, teachers should create a supportive environment where such emotions are normalized as part of the learning process.

-Metacognitive Reflection: using tools like the Cognitive-Affective Reflection Protocol (CARP) can assist students in processing their dissonance experiences unambiguously, promoting reasoning strategies transfer to future writing tasks.

-Language and Cultural Considerations: In EFL contexts, language ability interacts with emotional and cognitive elements. Structured verbal assistance during dissonance-based tasks may be essential to

ensure that linguistic inadequacy does not impede cognitive enhancements.

8. Conclusion

The Results of the current study underline the pivotal role of cognitive dissonance in improving persuasive reasoning and argument construction skills among EFL third year students at the University of Frères Mentouri (Constantine1, Algeria). By intentionally presenting the learners with credible counterpositions and asking them to integrate and respond to these when writing their essays, the research showed quantitative gains in the participants' writing quality and their qualitative shifts in their reasoning strategies. Conceptually, the findings extend Festinger's (1957) cornerstone work on dissonance, line up with Kuhn's (1991) Model of Epistemological development, and significantly engage with Pekrun's (2006) Achievement Emotion Theory. Didactically, the findings suggest that emotional discomfort, if coupled with a supportive environment, can drive cognitive engagement when writing a persuasive essay. The research mixed-methods design suggests a model for integrating psychological theory into applied education research by providing insights that are explanatory and actionable. By bridging linguistic, emotional and cognitive dimensions, the study offers a framework for argumentative writing instruction that is rested on empirical evidence yet sensitive to the challenges of EFL contexts. Future research works should explore longitudinal impacts, cross-cultural variations, and the interaction between individual student traits and dissonance responsiveness. Eventually, leveraging cognitive dissonance in writing instruction offers a promising bypath toward preparing not only more persuasive writers, but also more adaptive, reflective and critical thinkers.

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