

LEXICAL RICHNESS IN ADOLESCENT WRITING, INSIGHTS
FROM THE CLASSROOM: AN L1 VOCABULARY DEVELOPMENT STUDY

BY

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Abstract

This thesis constitutes a mixed-methods enquiry into how vocabulary develops across adolescence, within the context of New Zealand secondary schools. A quantitative approach was adopted to investigate vocabulary use in authentic written essays produced by secondary school English students ($N=141$) belonging to three age groups: 13-14, 15-16, and 17-18, from eight schools. Essays were analysed for the following three lexical richness features: lexical variation, lexical sophistication, and lexical density. With links between these lexical richness features and vocabulary size/skill in vocabulary use (Vermeer, 2000; Ravid & Zilberbuch, 2003; Malvern, Richards, Chipere, & Durán, 2009), signs of development were studied through comparison of scores across the three age groups. Quantitative findings indicate significant lexical development across year levels in the data set. Furthermore, the findings suggest that within the period of adolescence there is an even more specific period in which substantial development takes place: 15-18 years, or later adolescence.

The qualitative aspect of this study focussed on identifying teacher perspectives on influences from within the secondary school context impacting on vocabulary development during this significant period of acquisition. Seven secondary school English teachers were interviewed on the subject of lexical development as it occurs within the schooling environment. Contributions from the school curriculum to vocabulary acquisition were observed, with spikes in curriculum difficulty from year 11 (age 15-16) onward corresponding with the developmental spike observed in the quantitative data further supporting this observation. Non-schooling related influences were also identified, including cognitive development, reading habits, and attitude and orientation toward vocabulary.

The present study contributes to the growing field of later language acquisition through identification of a possible period of heightened development within the adolescent years. Importantly, it also highlights factors in students' everyday school lives which may contribute to their lexical development, raising implications both for those wishing to promote lexical development within the secondary school population, and more globally for our understanding of how heightened development occurs during this period. The study concludes with implications for theory, research and practice, together with limitations of the study and future research directions arising from this research.

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Chapter 1

Introduction

1.1 Aims of the study

The period of adolescence has been identified as a “developmental watershed” for L1 lexical acquisition (Berman & Nir, 2010, p. 183) at a time when there are calls for more research to address the issue that “little attention has been paid to how academic language typically develops through [the years of formal schooling]” (Nagy & Townsend, 2012, p. 103). In response to such calls from the literature, the present study seeks to contribute to our understanding of the process of lexical development during these important adolescent years. This study has two primary aims. The first is to examine further the developmental trajectories of New Zealand secondary school students with regard to productive lexical development. Secondly, the study investigates teacher perspectives on how lexical development occurs within the context of the secondary school.

1.2 Why focus on adolescence?

As mentioned above, recent research has indicated the importance of adolescence in terms of lexical development (Ravid, 2006; Bar-Ilan & Berman, 2007; Berman & Nir, 2010). However, in spite of recent advances in research into productive vocabulary development, we still do not have a complete or precise understanding of how and at what stage of adolescence this development takes place. For example, studies examining productive vocabulary development through the analysis of writing have typically focused on progress from late childhood to early adulthood; such studies have consistently identified participants in age groups from the end of adolescence as performing exponentially higher than those at the beginning of adolescence. While an evident conclusion is that significant lexical developments take place during this period, further questions also arise. Specifically, what remains unclear is the nature of such development during this period: is it linear? or is it possible to pinpoint a period within these years when heightened development occurs? and do all dimensions of lexical richness develop at an equal rate?

1.3 Why focus on productive lexical development?

From within the New Zealand context, several strands of research have been generated over the past few years into the role of receptive vocabulary knowledge in New Zealand secondary school education. Coxhead and fellow researchers have examined the receptive vocabulary size required to understand English and Science secondary school texts (Coxhead, Stevens & Tinkle, 2010; Coxhead, in press); additionally, a larger project is underway involving the development of a corpus of secondary school texts, incorporating all subjects (except languages) and all year levels (Coxhead & White, 2012). Further to this, a current research initiative investigates the receptive vocabulary size of New Zealand secondary school students (Nation, Coxhead and Larson, under review), with a large sample of secondary school students of different ages taking the Vocabulary Size Test (see also Coxhead, A., Nation, P. & Sim, D., under review). Thus, while significant recent progress has been made in our understanding of adolescent receptive vocabulary in New Zealand, productive vocabulary has not as yet been investigated in this context. The current study addresses that gap.

1.4 Why look at the schooling environment?

In an overview of vocabulary size in the first language, Goldfield (2013) notes that it is as adolescents encounter the demands of high school that vocabulary growth moves ahead, both in terms of engaging with class content and reading texts in specialised subjects such as history, economics and biology. This is not an isolated observation. Literature on later language development regards school as a domain which “extends” students’ language into “more complex academic language spheres” (Cummins & Man, 2007, p. 801); pushes students to “handle language in new ways” Christie (1988, p. 57); and constitutes the “major source of marked, literate lexical items” to which adolescents are exposed (Ravid & Zilberbuch, 2003. p. 268). Given that the secondary school environment is identified as an important component of later lexical development, it therefore seemed important for this study to investigate perspectives of development as seen from within school settings.

1.5 A personal interest

Underpinning an academic interest in this relevant area of research is a personal interest which contributed to the impetus for the study. During my secondary school years, I found the production of formal written essays relatively challenging, far more so than any written task I was faced with in subsequent years. Furthermore, sample essays seemed to be of an unattainably high quality. I recall feeling the language I had been using was now somehow lacking - I simply did not seem to have what was required in my repertoire. These struggles lessened over time, and I regained a sense of facility and competence in written tasks. And then for a period during my undergraduate study I tutored a 15-year-old L1 secondary school student in the subject of English, and recognised the same struggle in her essay writing process. Although she was intelligent, she struggled to produce sentences that were sufficiently formal and academic, at times resorting to googling sample essay phrases rather than devising her own. I pondered what lay behind the issues we both faced: was it that we had not as yet acquired a sufficiently advanced level of vocabulary? or was it that we were not sufficiently familiar with the academic written register? And what did teachers understand about the challenges we were facing? These L1 writer experiences sparked a personal interest in this line of enquiry.

1.6 Research questions

The current study aims to investigate productive language development across adolescence within the context of New Zealand secondary schools by seeking to answer the following questions:

RQ1: What do cross-sectional analyses of secondary school writing reveal about vocabulary development within the period of adolescence?

RQ2: What are New Zealand English teachers' perspectives on adolescent lexical development during the secondary school years?

1.7 Overview of the thesis

This introductory chapter has provided background to the current study, has described the research problem, and identified the purpose of the research in investigating lexical development in adolescence in New Zealand secondary school contexts. The chapter concludes with the research questions.

Chapter 2 reviews the literature on lexical richness in L1 later language acquisition, including quantitative findings to date. It then moves to an overview of theoretical and empirical work on factors which may impact on adolescent lexical development, including within the context of secondary schooling.

Chapter 3 outlines the methodology of the current study. It comprises two sections. The first section describes the quantitative research design for research question one; details of participant recruitment and data collection are discussed, as well as the method of analysis, use of computational tools, and statistical analysis procedures. The second section of chapter three details the qualitative methodological approach used to investigate research question two; participant recruitment, interview procedures, and the method of analysis are discussed.

Chapter 4 presents the quantitative findings of the study, responding to research question one. Mean lexical richness scores across year levels are given, and dispersion of performance within the year levels are also detailed.

Chapter 5 provides the findings for research question two, constituting thematically-organised teacher perspectives on lexical development across secondary school as captured in teacher interviews.

Chapter 6 is a discussion of the results of the investigation in light of the wider literature, bringing together findings for research questions one and two. Four key areas are discussed in detail: lexical development in later adolescence; the contribution of cognitive development; the contribution of the school curriculum; and individual variation and lexical development.

The final chapter of this thesis takes an overall look at what has been achieved in this study. Key empirical findings are discussed, as well as the theoretical implications of these findings for the area of later language development. Methodological implications and practical implications are proposed, together with the limitations of the current study and what this means in terms of interpretation of the research findings. Finally, important areas for future research are identified and discussed in relation to the contributions of the study.

Chapter 2

Literature Review

2.1 Introduction

Adolescence marks a period of substantial growth traversing many aspects of development, including vocabulary (Corson, 1997; Berman, 2004). Research in this area often adopts one of two main approaches: investigating quantitative signs of vocabulary growth among adolescents; and enquiry into factors during adolescence which promote vocabulary acquisition. These two approaches have yet to be integrated into the same study. This thesis aims to supplement a quantitative understanding of development occurring during adolescence, with qualitative insights into how development occurs, as seen within the secondary school settings.

This literature review discusses the most pertinent research in the literature, as background to this research focus. It is divided into three sections. The first section explores the lexical richness approach in L1 later language acquisition and discusses quantitative findings, to provide a comprehensive picture of what has been established to date. The second section looks at factors which may affect vocabulary development during adolescence, in light of present theories and findings. The third section approaches vocabulary development as seen within the context of secondary schooling. Together these sections constitute an overview of empirical and theoretical work which inform our current understanding of adolescent lexical development.

2.2 Lexical richness and adolescent development

The point of departure for this study is the notion of lexical richness. It is perhaps best encapsulated by Malvern and Richards' (2013, p. 1) simple definition, namely that it concerns "the quality of vocabulary in a language sample" and is a "multidimensional concept". More specifically, lexical richness is an umbrella term used to describe the overall effect of more specific measures including lexical variation, lexical density, and lexical sophistication (Nation & Webb, 2011), the three employed in the current study. Analysis of the vocabulary used in

writing for lexical richness features gives an idea of the breadth and depth of an individual's vocabulary: breadth in that "one of the major determinants of the vocabulary used in written production is the vocabulary size of the writer" (Laufer & Nation 1995, p. 307), and depth in that word knowledge must be strong enough for use, including "understanding and expressing meaning... regular grammatical patterns of occurrence, collocations or words that commonly occur with the word... formality, and word parts" (Coxhead & Byrd 2007, p. 123). Importantly, lexical richness has been linked to vocabulary size (Laufer & Nation, 1995), grade levels (Lemmouh, 2008), and perceived text quality (Engber, 1995).

In this section 2.2 I will discuss in more detail findings from these lexical richness studies, with particular attention to enduring gaps in our understanding which the present study seeks to address. The scope of this overview is limited to three key areas of productive development which have received much attention in the field, and which will be examined in the current study: lexical variation, lexical sophistication, and lexical density. To finish, reasons for adopting a lexical richness approach in adolescent vocabulary development research are briefly explored.

2.2.1 Lexical variation

Definition

Lexical variation (also known as lexical diversity) is measured by looking at the range of different words used across a text, or in other terms, the extent to which repetition is lacking (Malvern, Richards, Chipere & Durán, 2004; McCarthy & Jarvis, 2013). Discussion of the methods of lexical variation measurement, including tools of analysis, is taken up in section 3.2.4. Several L1 vocabulary acquisition studies have used lexical variation as a measure, showing overall trends of significant L1 lexical development across adolescence (Berman & Verhoeven, 2002; Stromqvist et al., 2002; Malvern et al., 2004; Johansson, 2008; Berman & Nir, 2010; Crossley, Weston, McLain Sullivan & McNamara, 2011). This section examines these findings, as well as theory relating to lexical variation and its development.

Lexical variation and L1 development

The majority of the research into lexical variation and L1 adolescent development has come from studies using the Spencer project corpora. The Spencer project, initiated with the goal of examining text production abilities of children, adolescents, and adults, recruited participants from the following age groups: 9-10 years, 12-13 years, 16-17 years, and adults (university students ages 20-30 years) (Berman & Verhoeven, 2002). The data were elicited through experimental design, in which participants produced narrative and expository texts on the topic of personal conflict. Seven countries participated (France, Holland, Iceland, Israel, Spain, Sweden, and USA), resulting in seven corpora which allow for reliable cross-linguistic comparisons. Data from Spencer project studies indicate that marked development, in terms of increasing lexical variation levels, occurred during adolescence. The studies (Stromqvist et al., 2002; Berman & Verhoeven, 2002; Johansson, 2008; Berman & Nir, 2010), covering English, Hebrew, Icelandic and Swedish writing samples, uniformly report on a trend of significant development in lexical variation between 12-17 years, with no significant development occurring in the years immediately before and after (9-12 and 17-adult), except in the Swedish corpus findings where growth in lexical variation levels was observed beyond age 17 (Johansson, 2008). These findings led Stromqvist et al. (2002, p. 53) to conclude that the period of 12-17 years constitute an “important developmental leap” in terms of lexical acquisition.

Together, these findings make a strong case for the assertion that substantial development of lexical variation occurs between ages 12 and 17. However, these studies do not give an indication of what development occurs within this five-year period spanning adolescence. Two further lexical variation studies not based on the Spencer corpus are that of Crossley et al. (2011) and Malvern et al. (2004) – using different age groups, they yield additional information as to the patterns of development across adolescence. Crossley et al. (2011) collected argumentative essays from three age groups of L1 American English students: 14-15 years, 16-17 years, and college freshmen. They found highly significant differences ($p < .001$) across all three age groups revealing that lexical variation levels increase during adolescence from age 14 onward. Reflecting on findings from this study, Crossley et al. conclude that “more advanced writers produce a greater variety of words” (2011, p. 302). Looking at a younger demographic, Malvern et al. (2004) analysed narrative compositions of English schoolchildren from three age groups: 7, 11 and 14 years. While

the 14 year olds were found to outperform the other age groups, only a modest difference was observed between the 11 and 14 year olds.

The empirical studies reported here suggest that if there is a “developmental leap” across the adolescent years as proposed by Stromqvist et al. (2002), reflecting the consensus of others such as Berman and Nir (2010), Berman and Verhoeven (2002), and Nippold (2006), then it is perhaps less likely to occur during the first two years of adolescence. However, this hypothesis needs to be tested through further empirical research, an issue the present study aims to address.

Why look at lexical variation?

Such findings of lexical variation development may be indicative of other areas of development. Summarising a body of L1, L2 and language impairment research using the lexical variation measure, Malvern et al. (2004) state that lexical variation is commonly seen as indicative of vocabulary size, and ability in vocabulary use, meaning its development also indicates underlying vocabulary growth. Berman (2007) situates this view within the context of adolescent lexical development, arguing that advanced vocabulary acquisition involves the extension of word knowledge, including acquiring synonyms and understanding polysemous meanings of words, the implication being that individuals have more words at their disposal to convey meanings.

High lexical variation scores are also interpreted as reflecting adherence to the written register. Lexical variation has been described as a typical feature of writing, with corpus findings revealing that lexical variation is stronger in written texts than in conversation (Biber, 1999). One interpretation of these findings proposed by Biber (2009) is that lexical variation is typical of written registers because the level of planning, revising and editing required to achieve use of a wide range of words is only afforded in writing. The view that lexical variation is characteristic of the written register is incorporated into adolescent lexical development studies to indicate an increasing adherence to written register conventions across ascending age groups (e.g. Berman & Verhoeven, 2002; Stromqvist et al., 2002; Johansson, 2008).

A critique of the lexical variation model is that the amount of acceptable repetition can vary across

text genres, and it is sometimes used as a rhetorical or literary device (McCarthy & Jarvis, 2010, p. 382 give the example of Abraham Lincoln’s “of the people, by the people, for the people”). While this factor merits consideration, Malvern et al. (2004) counter that high lexical variation will be inherently valued in the educational context, and that empirical studies have shown the validity of lexical variation as an index of development. Further, lexical variation has been identified as an aspect of student writing highly valued by secondary teachers (Corson, 1997). Additional empirical findings have demonstrated correlations between lexical variation in L1 college students’ written essays scores and assigned grades (McNamara, Crossley & McCarthy, 2009), as well as between lexical variation scores and educational background (Harnqvist, Christianson, Ridings & Tingsell, 2003). These findings highlight the importance of looking at lexical variation development in a student population, within an educational context.

2.2.2 Lexical sophistication

Definition

Lexical sophistication is calculated by the proportion of low-frequency or advanced words in a text out of the total number of words (Milton, 2009). The acquisition of this “sophisticated” vocabulary is seen as a significant linguistic development taking place principally during adolescence, with Berman (2007, p. 347) describing late-acquired vocabulary as reflecting “a considerable change in quality... and on a more formal level of usage than everyday oral vocabulary of younger children”. Studies examining lexical sophistication have variously measured use of Graeco-Latinate words (Berman & Verhoeven, 2002; Nagy & Townsend, 2012); word length (Berman & Nir-Sagiv 2007; Berman & Nir, 2010); use of abstract words (Nippold, War-Lonergan & Fanning, 2005; Berman & Nir, 2010); ‘literate’ words such as adverbial conjuncts and metalinguistic/metacognitive verbs (Nippold et al. 1992; Nippold, 1993); and low-frequency words (Crossley et al., 2011). These features align with Biber’s (2006) characteristics of academic language (see Table 2.1), as well as Nippold’s (2006) criteria of the “literate lexicon”, summarised by Bar-Ilan and Berman (2007, p. 2) thus:

...numerous derivationally complex words and low-frequency, semantically abstract items, metaphorical extensions of earlier-acquired core meanings, and words pertaining to school-related fields of knowledge. Such words tend to appear mainly in the written modality and in texts that can be characterised as “high register”, like those dealing with science, art and literature.

Accordingly, lexical sophistication is frequently associated with the academic register. Nippold’s comment that development of the literate lexicon is a key aspect of later language acquisition (2006) underlines the value of investigating its development during adolescence; its academic orientation, noted here, further highlights the relevance of situating the present investigation in a schooling environment.

Table 2.1 Biber’s (2006) features of academic language

<ul style="list-style-type: none">• Latin and Greek vocabulary• Morphologically complex words• Nouns, adjectives and prepositions• Abstractness• Grammatical metaphor• Informational density

Lexical sophistication and L1 development

Research into the development of lexical sophistication has highlighted the importance of the secondary school years. Most notable is Corson’s (1985) widely-cited study into the acquisition of Graeco-Latinate words. Corson argues these words are important for academic success, yet difficult to acquire without high levels of exposure. Analysing the written production of L1 pre-adolescent and mid-adolescent school students, he found that middle-class 15 year olds used markedly higher levels of Graeco-Latinate words in their writing; however, this was not the case for their working-class counterparts. These findings continue to influence enquiry into adolescent lexical development through Corson’s “lexical bar” theory. The crux of this theory is that certain

texts have a “lexical bar” which poses a barrier for readers or listeners who do not have the advanced vocabulary needed for comprehension.

More recent studies have taken a similar approach to Corson’s, in looking at word origin as an index of lexical sophistication. With the view that Graeco-Latinate words “represent a more formal, literate level of language use than words of its native Germanic stock” Bar-Ilan and Berman (2007, p. 45) analysed the Latinate-Germanic ratio of 192 expository and narrative texts produced by 16 native American English speakers belonging to the four age groups of the Spencer project corpora (9-10; 12-13; 16-17; adult - reviewed in section 2.2.1). It was found that Latinate word use rose as a function of age, most notably between the 12-13 group and the 16-17 group; moreover, with age, participants increasingly exploited the Latinate-Germanic distinction in differentiating between expository and narrative text genres. Deliberately confined to the domain of vocabulary use, Bar-Ilan and Berman (2007) conclude that their study provides empirical support towards the view that lexical development is a crucial component of developing linguistic expression.

Berman and Nir (2007; 2010) also investigated the Latinate-Germanic ratio of word use in written texts. These studies looked at data from the English Spencer corpus, showing that 16-17 year olds scored significantly higher than the 12-13 year olds in terms of Latinate word use in narratives and expository essays. These findings suggest that the literate lexicon undergoes substantial development between 12-17 years in terms of Latinate word use. Taking a different approach, Malvern et al. (2004) looked at low-frequency word use from childhood to early adolescence. Interestingly, in their England-based study, no significant difference was found in low-frequency word use in narrative compositions across three younger age groups: 7, 11, 14. Taken together, these findings suggest that if there is significant development in lexical sophistication across adolescence, it may occur in the years between ages 14-17. It may also be the case that low-frequency words and Graeco-Latinate words are acquired at different rates. However, no previous study has as yet provided the empirical evidence required to confirm or refute these hypotheses. This study aims to provide such evidence.

Why look at lexical sophistication?

Lexical sophistication scores have been linked to vocabulary size (Nation & Webb, 2011), knowledge of “difficult” words (Vermeer, 2000), and integrally, knowledge of the “literate lexicon” (Bar-Ilan & Berman, 2007). Nippold further suggests that acquisition of more sophisticated vocabulary facilitates further cognitive, linguistic and academic growth (2004). Because of its associations with the school years, the lexical sophistication measure is frequently used as an index of lexical development across childhood, adolescence and adulthood (e.g. Malvern et al., 2004; Bar-Ilan & Berman, 2007; Berman & Nir, 2007, 2010).

It has been widely argued that correlations between advanced lexical usage and higher grades render acquisition of the literate lexicon an important predictor of academic achievement, and accordingly, that a lack of familiarity with such language can be a source of academic failure (e.g. Corson, 1997; Fang, Schleppegrell & Cox, 2006; Tolchinsky, Marti & Llauro, 2010). While a broader discussion of links between vocabulary and academic achievement is given in section 2.4.2, the remainder of this section reviews aspects of lexical sophistication which may contribute to its bearing on academic success.

As Nippold (2006) observes, the kinds of words denoting lexical sophistication characteristically occur infrequently in the language as whole, but occur with greater frequency in formal written texts. A similar factor is reflected in Zwier’s (2008) referring to academic words as “brick and mortar” words, reflecting their central role in academic texts. Within this line of thought, some therefore argue that lexical sophistication may indicate a familiarity with the written register (e.g. Bar-Ilan & Berman, 2007). Romaine’s (1984, p. 215) description of Graeco-Latin words as “a badge of education and social status” reflects that their use indicates familiarity with the written register, and how this is perceived socially. Lexical sophistication may also exhibit skill as a writer, as “using low-frequency words allows learners to express meaning using more precise terms” (Nation & Webb, 2011, p. 251). The reality of this separate lexicon and the importance of its place in education are such that the New Zealand Ministry of Education emphasises the following on their website: “the vocabulary that students need to use in academic work, particularly in reading and writing, is different from what they may use for everyday interactions” (Te Kete Ipurangi, 2012). That lexical sophistication is a high-stakes development renders it an important focus of

the current study.

2.2.3 Lexical density

Definition

Lexical density is measured by the proportion of content words (nouns, lexical verbs, adjectives and non-grammaticalised adverbs) used in a text - the remaining words being function words, which serve a grammatical purpose (Schmitt, 2000). Lexical density is characteristic of written English, and is typically achieved through use of fewer clauses and greater embedding, particularly in the noun phrase (Halliday, 1989). While lexical sophistication and lexical variation are typically seen as indicative of word knowledge or vocabulary size, lexical density, rather, can be seen as reflecting an individual's ability to use words resourcefully in text construction (Biber, 1999).

Lexical density and L1 development

Research into L1 lexical density has revealed that adolescence constitutes a significant period for its development. Five key studies reveal similar trends in the growth of L1 lexical density levels, all using data from the Spencer Project corpora (see section 2.2.1 for details of the Spencer project). Analysing English, Hebrew, Icelandic and Swedish together, Stromqvist et al. (2002) looked at lexical density levels of spoken and written texts across four age groups (9-10; 12-13; 16-17; adult). Due to the research focus of the current study, only findings from the written corpus ($N = 17128$) will be discussed here.

Marked differences were observed in the lexical density of the texts produced by the 12-13 year olds and the 16-17 year olds, which Stromqvist et al. (2002:54) described as demonstrating a “clear developmental leap”. However, no significant differences were found between the two youngest groups (9-10 and 12-13 years), or the two oldest groups (16-17 years and ‘adults’), further highlighting the significance of the development occurring during the teenage years. Parallel findings from the same data sets are reported in Berman and Nir (2007; 2010) when analysing only the English data from the Spencer project ($N=80$), and Johansson (2008) when analysing only the Swedish data from the Spencer project ($N=316$). Ravid (2006) investigated nominal density levels in texts produced from late childhood to early adulthood. Nominal density levels were found to

increase with age, rising “dramatically” from age 12-13 to age 16-17, and with growth continuing into adulthood. In discussing these findings, Ravid (2006) places emphasis on the view that this development is linked to both increased syntactic complexity and the informative content of texts, highlighting the contingency of lexical development on other factors. In sum, the findings discussed here indicate that the period of 12-17 years appears to be significant in terms of development of lexical density in writing, mirroring the findings on lexical diversity and lexical sophistication discussed in the previous sections. An issue remains in that no studies have as yet investigated what development occurs within the period of 12-17 years, which is a focus of the current study.

Why look at lexical density?

It has been suggested that an age-related increase of content words in writing may be indicative of a developing awareness of written register norms. Considering corpus findings which show a significant difference in content word use between spoken and written texts, Halliday (1979) argues that this difference in lexical density levels is one of register. He further suggests that the secondary years are a time when individuals become increasingly aware of register differentiation, implying that we can expect written register features such as lexical density to develop during this period. Accordingly, looking at nominal density development, Ravid (2006, p. 809) interpreted increasing levels of nominal density across age groups as an alignment with typical conventions of adult written text. She adds that it is a development which is “highly dependent on the combined effect of literary and socio-cognitive factors”. Taken together, with findings that lexical density has been consistently identified as a characteristic of secondary school textbooks (Ravid & Zilberbuch, 2003; Fang, et al., 2006), it is evident that throughout formal schooling these register norms are modelled to students on a regular basis.

In addition to conforming to register norms, Ravid and Zilberbuch (2003) see increasing lexical density in writing as reflecting a more skilful and economical use of words for different purposes in text construction. Townsend, Filippini, Collins and Biancarosa (2012, p. 499) expand this idea, adding that there is an *expectation* in academic writing that ideas be expressed concisely. In this way, lexical density has been linked to “information packaging”, the notion that as content words carry meaning in a text, a higher number of content words indicates a larger information load

(Biber, 1999, p. 731). Biber further states that different discourse genres have different lexical density norms, with academic writing (such as that expected of secondary school writers) balancing the need to convey information (resulting in higher lexical density) with discursive features such as argumentation and evaluation (requiring lower density levels). The present study therefore seeks to examine to what extent New Zealand secondary school students show alignment with academic norms through looking at lexical density levels in their academic writing.

2.2.4 Why take the lexical richness approach?

In recent years lexical richness has been the focus of several studies on adolescent lexical development, as discussed in the previous sections of this chapter. This section outlines two key reasons as to why lexical richness is such a valued approach for researching adolescent vocabulary development, and by the same token, why it is the focus of the current study.

An important benefit of using lexical richness to measure development in adolescent vocabulary studies is that it constitutes an appropriate research design for the adolescent age group. As Nippold (2004, p. 11) points out, later language development differs from that of earlier years in terms of its “speed, salience and substance”. As its incremental nature makes it difficult to measure, Nippold states that researchers are required to study adolescents by looking at widely spaced age groups, investigating their performance on challenging tasks. This has become the model for many lexical development studies focused on the period of adolescence; lexical richness measurements fit this model well because of the ease of comparing data cross-sectionally, and its design in assessing typically challenging writing tasks.

Furthermore, recent developments in computational linguistics over the past few years (e.g. McNamara et al., 2010; Crossley et al., 2011) have meant that researchers have been able to compare large corpora of writing on aspects of lexical richness including lexical variation, density and sophistication. With these newly developed computational tools, lexical richness as an index of adolescent lexical development has become a useful research approach. Studies can have large numbers of participants as analysis is straightforward and automatic, promising greater validity within the study. Furthermore, because all data sets have undergone the same automatic analysis

procedure, data can be reliably compared cross-sectionally. As Crossley (2013, p. 269) concludes, “we are at an important intersection of language and technology where practical and accurate computational tools are readily available for advanced text analysis”. This intersection marks a new period of opportunities in the area of adolescent lexical development, which in the past few years have been well-applied.

2.2.5 A word on experimental vs. authentic texts

The traditional approach to data collection in L1 lexical richness studies is to elicit written texts under experimental conditions. For example, the Spencer corpora, which have been widely used in this research area, consist of written and spoken texts produced under controlled conditions. Participants produced both narrative and expository written texts responding to a personal conflict portrayed in a silent video, with 30 minutes to complete each response (Stromqvist et al., 2002). Similarly, in Malvern et al.’s (2004) study of lexical diversity and sophistication from late childhood to early adolescence, participants were given one hour to produce a written narrative beginning with the prompt “*The gate was always locked but on that day someone had left it open...*”.

On the other hand, Crossley et al.’s (2011) study employed a more ecologically valid approach, in that the texts participants produced were part of curricular requirements for their school courses, with prompts for participant groups taken from SAT (Scholastic Aptitude Test) writing section for their corresponding grade level (grades 9, 11 and college freshman). Few studies have elected to use data produced from within the school curriculum, as in Crossley et al.’s (2011) study: despite this, there are important reasons for focusing on the types of writing students actually do, as opposed to what they may produce under experimental conditions.

Firstly, there is a risk that experimental elicitation of writing which does not emulate school practices may not reflect writing produced in real-life circumstances, as there is no clear goal for the writing beyond producing a piece of writing for the researcher. Given this, it is possible that less effort or care would be exerted during the writing process compared to writing done for school or in other areas of life. However, if students are producing a written essay for their teacher it is

probable that most students will want to display their knowledge and skill to the best of their ability, and in doing so are arguably more likely to exploit their full vocabulary repertoire. Furthermore, the writing tasks set as part of the school curriculum typically require more intense intellectual engagement, and greater complexity, than may be possible to convey in an experimental situation. In short, when analyzing authentic texts we are more likely to be working with language produced by students pushed to their developmental limits. In response to the factors raised here relating to ecological validity, the present study aims to follow Crossley et al.'s (2011) approach in using authentic written texts produced as part of the school curriculum.

2.2.6 Summary

This section has presented an overview of the lexical richness approach to adolescent lexical development research, together with key findings to date. While in recent years significant ground has been covered, as it stands, no study to date has looked at lexical richness levels of students at the beginning, middle and end of adolescence. Such a study would enhance our understanding of how lexical richness develops within and across adolescence. Furthermore, while investigations have explored lexical development under experimental conditions, the analyses and discussions seldom consider the contexts in which the language was produced. A key aim of this thesis is to explore adolescent lexical development taking a more situated approach, considering teacher perspectives on influences which may affect lexical development during the secondary school years. This last aim is discussed in greater detail in section 2.4.3.

2.3 How does lexical development occur during adolescence?

As explored in the previous section, later language acquisition researchers have identified adolescence as a period of marked lexical development, leading Berman and Nir (2010: 183) to conclude that adolescence is a “developmental watershed” for lexical acquisition. This section explores two fundamental aspects that are seen as influencing vocabulary development during adolescence: cognitive development and literacy.

2.3.1 Cognitive developments

A factor commonly associated with later vocabulary acquisition is the cognitive development that occurs during adolescence, allowing for acquisition of more complex vocabulary and at greater rates (Tolchinsky, 2004; Bar-Ilan & Berman, 2007; Owens, 2008). Three key models of later cognitive development are commonly attributed to these spiked acquisition rates: metalinguistic awareness, abstract thought, and changes in language processing. These inter-related factors will be discussed briefly in turn.

Metalinguistic awareness

Karmiloff-Smith's (1992) influential "representational redescription hypothesis" posits that greater metalinguistic awareness stems from a change occurring between the ages of 7-17 where implicit knowledge is "re-represented" as explicit, declarative, abstract knowledge. Drawing on this hypothesis, Owens (2008) adds that greater metalinguistic awareness means an individual is able to analyse language as a decontextualised object. Vocabulary-related developments linked to increased metalinguistic awareness include the capacity to consciously reflect on word structure (Moats & Smith, 1992), to deconstruct the meanings of proverbs, metaphors, and idioms (Nippold, 2006), and to define words (Nippold, Hegel, Sohlberg & Schwarz, 1999). This growing ability to analyse language in a decontextualised way is considered to contribute substantially to linguistic development during the adolescent years, including the expansion of vocabulary (Tolchinsky, 2004).

Abstract thought

Storck and Looft (1973, p. 192) propose that the development of abstract thought occurring before and during adolescence marks a shift in vocabulary acquisition from "concrete and action-oriented" word meanings in early childhood to "more abstract and conceptual" meanings in later childhood and adolescence. This development is seen to be particularly important given that the advanced lexicon is rife with abstraction (Biber, 2006). Nippold notes further that development of abstract thinking is necessary before an individual can begin to acquire word meanings such as *democracy* or *relevance*, or to understand secondary meanings of polysemous terms, such as the difference between *the birds flew above the trees* and *she sang above the noise* (2006, p. 37).

Changes in language processing

In a meta-review of studies relating to adolescent cognitive developments, Ravid (2004) notes that the mental lexicon undergoes substantial improvements in its organisation during adolescence. She adds that these improvements are the result of developments in the areas of attentional, memory, and information processing systems. Owens (2008) characterises this change in lexical storage as increasingly relying on “deep” strategies involving semantic categories and relations, in contrast to the surface-level strategies dealing with syntax and phonetics which are preferred in earlier years. Berman (2004) argues that this change, beginning in the primary school years, enables more linguistic information to be processed, resulting in greater opportunity for acquisition. Ravid (2004) adds that changes in the organisation of the mental lexicon increase efficiency in the storage, selection and retrieval of lexical items, meaning that more lexical items can be held, processed, and used. These cognitive developments may enable students to use more advanced vocabulary, and in new ways, as they progress through adolescence. Results from the present study will reveal if such changes in vocabulary use are apparent in student writing.

2.3.2 Development through literacy

The current study draws on Tolchinsky’s (2004, p. 245) definition of literacy, referring “not only to the acquisition of written language skills, but to social literacy, the process by which subjects growing up in a literate community become acquainted with the repertoire of discourse varieties that characterise that community”. Both development theory and empirical research support the notion that literacy plays an integral part of the process of later lexical development, in terms of written input (i.e. reading) and written production. These processes are particularly relevant to the schooling environment in which the current study is situated. Accordingly, this section explores the relationships of both reading and writing to vocabulary development.

Reading

It is widely acknowledged that reading and vocabulary acquisition are inter-related. If we look at child studies, research findings provide considerable evidence of this link. Notably, Nagy, Herman and Anderson’s (1985; 1987) seminal studies show how reading results in vocabulary uptake among primary school age participants, leading to the conclusion that “incidental learning from

context accounts for a substantial proportion of the vocabulary growth that occurs during the school years” (1985, p. 233). In a similar vein, research has shown longitudinal links between the amount of free reading and vocabulary levels in children (Cunningham & Stanovich 1991; Stanovich & Cunningham 1992). It could be expected that parallel links between reading and vocabulary acquisition continue into adolescence. Indeed, in her book on later language development, Nippold (2006) argues that reading as a source of lexical development becomes increasingly important from late childhood onward. Despite this claim, the link between reading and vocabulary uptake during adolescence has remained largely unexplored. While the present study does not examine this connection directly, it does look into the relationship between reading and vocabulary development as seen by secondary teachers.

Vocabulary uptake through reading has been explored from several perspectives. Nippold (2006) argues that *contextual abstraction*, the learning of word meanings through clues in their context, is one of the principal ways that vocabulary is learned during later stages of language acquisition, suggesting that adolescents get opportunities for contextual abstraction through wide reading. However, referring to second language contexts, Nation (2007) emphasises that this type of word learning can be a drawn-out process, with multiple exposures necessary to bring about incremental gains. He further adds that successful uptake is sometimes contingent on such factors as the reader’s background knowledge and their reading skills. While we can expect this process to be different for L1 readers in terms of facility of uptake, these factors are likely to apply to contextual abstraction among L1 readers to some degree.

Stanovich and Cunningham (1992) argue that people who frequently read have more efficient language processing mechanisms, with areas such as phonological coding, semantic activation, parsing, and induction of new vocabulary getting practice every time an individual reads. Based on his study of the acquisition of academic words among socioculturally diverse adolescents, Corson (1997) concludes that students who are required to use academic language will benefit from exposure to academic vocabulary through reading: exposure is seen as assisting in developing the nodes in the lexicon that connect morphological and semantic associations with a word, which are called upon when an individual is recalling the meaning or form of a word. Adopting a similar

view, Townsend et al. (2012) outline the cyclic issue that frequent readers have increased exposure and therefore greater opportunity to acquire new words. On the other hand, those who engage less and may struggle with reading have less exposure, which impacts on reading comprehension and their ability to infer meaning from context. Taken together, the findings discussed in this section suggest the extent to which an individual reads may affect vocabulary acquisition in multiple ways. The following section explores ways in which this may also be the case for writing.

Writing

While it has received less attention, writing has also been seen to provide conditions for development in two key ways. Firstly, the cognitive processes underpinning writing may foster vocabulary development. Tolchinsky (2004) proposes that in freeing language processing from the time pressures experienced in oral language production, writing allows for the development of contemplative linguistic capacity, and analysis of words in isolation. Ravid and Zilberbuch (2003) similarly theorise that the revision, review and rewriting typical of the writing process encourages the retrieval of more advanced vocabulary that may not usually be readily available for use, in turn strengthening their nodes in the mental lexicon.

Secondly, the formality of written register norms may encourage use of more sophisticated vocabulary. As Bar-Ilan and Berman (2007, p. 26) summarise, “written expository text construction represents the hallmark of literate linguistic expression, in terms of structural complexity, lexical density, as well as level of usage or register”, an observation shared by others (Ravid & Berman 2006; Berman & Nir-Sagiv 2007; Townsend et al., 2012). From this, we could postulate that practice in producing written expository texts may result in greater consolidation and ultimately higher levels of use of such advanced language.

Certainly, L2 theory supports this notion, most notably with Swain’s (1985) influential Output Hypothesis, described recently thus: “The output hypothesis claims that the act of producing language (speaking or writing) constitutes, under certain circumstances, part of the process of second language learning” (Swain, 2007, p. 5). Responding to an empirical gap in the literature, Izumi (2002) explored further the relationship between L2 output and awareness of the target language. In finding that linguistic production was more effective than “enhanced input” in terms

of fostering greater awareness of the target language and cognitive integration of new items, Izumi (2002, p. 570) concluded that “output triggered deeper and more elaborate processing of the form, which led them to establish a more durable memory trace”. A similar view was taken by Wolsey (2010) in his L1 study on vocabulary uptake through academic writing tasks. Positing that “composing may place greater demands on the working memory than reading”, Wolsey (2010) argued that secondary school writing tasks which require complex thinking may also lead to increased use of academic vocabulary. The US-based study analysed five corpora of student writing based on five different academic writing tasks, finding that those tasks requiring more higher-order thinking promoted use of words from the Academic Word List (Coxhead, 2000) as well as increased word length.

Tolchinsky (2004) sees the offline processing of writing as contributing to L1 vocabulary development: “Writing frees language processing from the time pressures characteristic of oral language, so enabling the development of contemplative linguistic capacities - and consideration of... words in isolation”. For example, Bar-Ilan and Berman (2007) see the writing students produce at secondary school as a means through which individuals develop the language of more formal registers. In light of findings which showed more sophisticated vocabulary usage emerging in written expository texts from age 16 onward, Bar-Ilan and Berman (2007, p. 27) conclude that while primary school age children are still preoccupied with “writing as a notational system”, by secondary school, students are developing their understanding of “writing as a special discourse style”. While aiming to conform to written register norms, adolescents develop a more advanced vocabulary repertoire. The present study aims to look more closely at these influences within the schooling context and their relationship to vocabulary development.

2.3.3 Summary

This section has explored conditions for advanced lexical development which occur during the adolescent years, including increased cognitive development, and literacy-related developments. Together, these paint a picture of influences at play in the lexical development process as an individual moves through adolescence. The factors discussed here will be explored further in the qualitative section of the study, to explore to what extent they influence the lexical development

of New Zealand secondary school students.

2.4 Vocabulary development and the secondary school environment

Where the previous section looked broadly at factors contributing to lexical acquisition during the adolescent years, here I will look at development in the context of formal schooling. With children and adolescents spending around 15,000 hours of their lives at school (Rutter 1982), and with the school's strong emphasis on learning and development, there is a case for considering the role of the school in adolescent lexical development. This section looks at the relationship between the school environment and vocabulary development.

2.4.1 School as a “literate environment”

Section 2.3.2 discussed how vocabulary develops through literacy activities. I now consider research perspectives on school as a “literate environment”, a term used by Smith, Greenlaw and Scott (1987), with the view that such literate environments may promote lexical development.

School has been conceptualised as a domain which pushes and extends students' language and language use. Cummins and Yee-Fun (2007, p. 801) suggest that “schools spend at least 12 years trying to extend the conversational language that native-speaking children bring to school into these more complex academic language spheres”. At the secondary level in order to engage with course content students are required to “handle language in new ways” Christie (1988, p. 57); in a similar vein, Halliday and Webster state that the secondary years constitute a period where students are “potentially very aware of language, and receptive to new ways of exploring and exploiting it” (Halliday & Webster, 2007, p. 62).

Research indicates that students need multiple opportunities to read and use vocabulary in different contexts in order to acquire new vocabulary (Stahl & Fairbanks, 1986; Laflamme, 1997; Blachowicz & Fisher, 2000; Nagy & Townsend, 2012). Ravid and Zilberbuch (2003, p. 268) take this concept further, arguing that “the major source of marked, literate lexical items and morpho-syntactic devices is exposure to written school-related language produced by expert writers”, a proposal echoed by others (e.g. Nippold, 2006; Bar-Ilan & Berman, 2007; Gamez & Leseaux,

2012; Townsend et al., 2012). In this way, secondary school is considered to promote academic language acquisition through exposure to academic texts: research shows that linguistic features of texts used in secondary schools strongly align with characteristics of academic language as outlined by Biber (2006), including information density (Fang, Schleppegrell & Cox, 2006), increasing register variation (Halliday, 1979), morphologically complex words (Nippold & Sun, 2008), and academic vocabulary (Coxhead, 2011). Furthermore, enquiry into the types of materials used in New Zealand secondary schools reveals that the texts students are exposed to are diverse in nature, spanning a range of sources and genres, such that in the classroom students are exposed to a wide variety of vocabulary (Coxhead & White, 2012).

Based on empirical findings discussed in section 2.3 demonstrating links between task demands and advanced vocabulary use, Wolsey (2010) argues that the cognitive demands placed on students at the secondary level impact on language acquisition and use, in that “students engaged in highly literate environments are likely to try out and use increasingly precise words to express their understanding of complex topics and concepts” (2010, p. 203).

More specifically, Nippold (2004) argues that the use of low-frequency metacognitive verbs (such as *assume*, *construe*, *realise*) is promoted when students are assigned work such as written expository essays or persuasive essays, in which they are required to engage in cognitively challenging tasks and draw on their linguistic resources to convey complex thought. Reflecting these arguments, Llosa et al.’s (2011) study investigating the challenges of academic writing in secondary school found that the most frequent challenge reported by students was the process of conveying ideas using the appropriate conventions of written language, including vocabulary. When aligned with scholarship which suggests that the writing expected of students becomes increasingly complex at secondary and post-secondary levels (e.g. Cope & Kalantzis, 1993; Christie, 2002; Schleppegrell, 2004), these findings lend weight to the argument that particular conditions in secondary school promote vocabulary acquisition.

2.4.2 Links between vocabulary and achievement

A growing body of empirical studies demonstrate the significance of vocabulary for general academic performance, underlining the importance of the process of lexical development for

secondary school students. This section is divided into three parts. Firstly, general links between vocabulary size and achievement are discussed. Then, lines of thought behind why vocabulary has such a strong bearing on achievement are discussed, which can be viewed in terms of the receptive/productive dichotomy of vocabulary knowledge.

Empirical findings

Snow, Lawrence and White's (2009) quasi-experimental case study of a vocabulary intervention programme in an American middle school provides empirical evidence to support this notion. Over the course of 24 weeks, teachers within the school incorporated into their lessons a focus on what Snow et al. (2009) term "all-purpose academic words", most of which were drawn from the Academic Word List (Coxhead, 2000). The teaching approach included explicit instruction of meaning, recurrent context-embedded exposure to the word, opportunities for written and oral word use, and instruction in word-learning strategies. An analysis of pre- and post-intervention vocabulary test scores revealed that students' participation resulted in remarkable gains, and importantly, post-test scores were found to strongly predict performance on a state-wide performance test.

In response to the observation that the importance of vocabulary for academic achievement has been widely noted but scantily researched, Townsend et al. (2012) provide further empirical evidence to support this notion. Also looking at middle school students, they examined the relationship between academic word knowledge and academic achievement with the view that "vocabulary can serve as an accessible entry point into the building of a rich understanding of the many linguistic features of academic English" (p. 498). To measure academic vocabulary knowledge, students completed the Academic Word Level subtest of the Vocabulary Levels Test (Schmitt, Schmitt & Clapham, 2001), consisting of 60 words from the Academic Word List (Coxhead, 2000). Results showed that middle school students' general academic vocabulary knowledge predicted achievement in Maths, Social Studies, Science, and English highlighting the importance of academic word knowledge for achievement at the secondary level.

The integral role of vocabulary knowledge for academic success extends beyond schooling: Pedrini and Pedrini (1975) found that vocabulary knowledge explained around 35% of variance in college grades, and Turner and Williams (2007) revealed that pre-course vocabulary knowledge

was a stronger predictor of course performance than pre-course topic knowledge or critical thinking. This study underlines the implications of vocabulary acquisition occurring at secondary school for the years beyond.

Receptive knowledge and achievement

Given that vocabulary knowledge is integral to reading comprehension (Biemiller, 1999; Stahl & Nagy, 2006), it follows that a sufficient level of receptive vocabulary is necessary in order to access the school curriculum. As Fang, Schleppegrell and Cox (2006) note, learning language and learning concepts go hand in hand, with all new concepts being represented predominantly through language. This idea is similarly conveyed through Stahl's (2005, p. 95) assertion that "vocabulary knowledge *is* knowledge". With regard to secondary school education, knowledge is typically conveyed through the "literate lexicon" (Ravid, 2004), the specific set of advanced vocabulary students are required to know in order to engage with "literate activities".

Empirical research in the New Zealand context confirms the importance of student knowledge of the literate lexicon through its prevalence in secondary school texts - at least with in the case of academic and low-frequency words. Wallace (2003) analysed the vocabulary used in secondary school national assessment papers, finding that words from the Academic Word List (Coxhead, 2000) had a coverage rate of 11.9%, and concluding that a strong academic vocabulary is needed for adequate comprehension of the texts. Coxhead, Stevens and Tinkle (2010) examined the vocabulary in science textbooks aimed at New Zealand secondary students from years 9 to 12 (age 12-17). Interestingly, it was found that as the year level of the intended audience progressed, the textbooks contained more low frequency words, although the distribution of academic words did not change, and Academic Word List coverage remained lower than that of university level texts. Nonetheless, Wallace's (2003) and Coxhead, Stevens and Tinkle's (2010) findings indicate that the vocabulary of New Zealand secondary school texts becomes increasingly advanced, and students are therefore required to progressively broaden their receptive vocabularies in order to keep up with the curriculum.

Productive ability and achievement

The extent of an individual's productive vocabulary knowledge is widely considered to affect an

individual's ability to produce quality outputs. In this way, studies have long established that vocabulary use plays an integral role in perceived writing quality (e.g. Perera, 1984; Linnraud, 1986; Astika, 1993; Engber, 1993). Corson (1997) sees vocabulary diversity as a central component: drawing on findings from Graves (1986), Issacson (1988) and Nielsen and Piche (1981), he claimed "there is much evidence that vocabulary diversity is the most consistently used marker of proficiency in education... in written work, what teachers currently see as "good" narrative writing is closely linked to vocabulary diversity" (1997, p. 673). More recent findings support this claim. For example, as mentioned in section 2.2.1, McNamara et al. (2009) demonstrated links between perceived writing quality and lexical variation in an analysis of text features and writing scores of college freshman essays. In the same study, McNamara et al. (2009) also found links between writing scores and use of low-frequency words, leading to the suggestion that "high proficiency writers use words that occur less frequently in language" (McNamara et al., 2009, p. 70). Crossley et al. (2011) similarly reported links between perceived essay quality and lexical variation and word frequency, with the latter being the stronger of the two. When these findings are considered alongside the finding that writing skills are one of the best predictors for academic achievement among high school seniors (Geiser & Studley, 2001), it is clear that vocabulary acquisition is a high stakes process for writers.

Summary

The findings discussed in this section underscore the important link between vocabulary knowledge and academic success. With a strong vocabulary, school students are well-equipped to handle the school curriculum, with the tools to understand increasingly advanced levels of input, and to produce high-quality output. The significance of vocabulary for academic achievement merits qualitative exploration in the New Zealand secondary school context. The present study aims to explore further this avenue of enquiry.

2.4.3 The significance of the teacher

Lexical development studies often acknowledge the pivotal role of teachers, although usually this is through recommendations to teachers in the discussion or conclusion, such as the following from Townsend et al. (2012, p. 517): "Teachers can better scaffold their students' academic language

development if they can recognize the challenging linguistic demands of disciplinary texts”. Fewer studies have looked at the impact teachers may actually have, or the insights they may yield, with regard to vocabulary development.

Certainly, teachers appear to have a significant influence in this respect. Gamez and Leseaux (2012) examined the relationship between the language teachers used in the classroom and the vocabulary uptake of students in American middle schools (age 11-13). After controlling for students’ initial vocabulary sizes, it was found that the teachers’ use of diverse and sophisticated vocabulary had a positive effect on students’ vocabulary scores in the post test. Importantly, this study reveals the impact teachers have on implicit vocabulary learning, and points to the significant role teachers play in the vocabulary development of their students. A study which also achieves this is that of Connor, Son, Hindman and Morrison (2005), who revealed that affective factors in teacher/student relationships may also impact on vocabulary development. In their primary school-based study looking at multiple factors influencing vocabulary development among children, correlations were found between warmth/responsivity levels of teachers and vocabulary skills in students. While these findings may not translate to such a degree at the secondary level, with teacher/student rapport being arguably less integral at later stages, it nevertheless highlights the role a teacher can play in students’ vocabulary development.

Acknowledging the significant role teachers hold in promoting vocabulary development in the New Zealand context, two key New Zealand research initiatives have shed light on this process from the teachers’ perspectives. Responding to the increasing demands placed on curriculum teachers with regard to linguistic support for L2 students in their classrooms, Gleeson (2010) conducted a large-scale qualitative enquiry into curriculum teachers’ beliefs and teaching approaches with regard to this change. Importantly, Gleeson’s (2010) work highlighted significant gaps between teachers’ views and approaches to language support and L2 students’ needs, underscoring the need for extra training in this area for pre-service teachers. This important study demonstrates the value of looking at in-service teachers’ own views and behaviour. In recognition of Gleeson’s (2010, p. 108) finding that vocabulary is “... the most commonly recognised linguistic challenge” for secondary school teachers, Coxhead (2011) has also provided important

research in this area. Importantly, Coxhead noted that while excellent vocabulary teaching approaches were modelled to teachers in resources such as the Ministry of Education's (2009) DVD series "Making Language and Learning", no empirical study had looked at the extent to which such practices were adopted in the classroom. Data from an online survey with 61 New Zealand teacher respondents highlighted the complexities behind treatment of vocabulary in the secondary school classroom, in that: "the subjects people teach, their years of experience, the year level of the students, and the decile of the school all appear to have some effect on the decisions teachers make on approaching and teaching specialised vocabulary" (Coxhead 2011, p. 50).

The contributions of these two studies underline the usefulness of enquiring into teacher perceptions and approaches. In addition, Erlam's (2010) critical analysis of applied linguistics research in New Zealand between 2005-2009 (inclusive) identified a concerning disjoint between research focus and practitioner needs. Erlam suggested that a potential factor underlying this gap was the finding that the bulk of the research analysed was conducted by researchers, including MA and PhD students, with very few projects carried out by teachers themselves. A further issue Erlam identified is that researchers do not begin by looking at the present state of teacher knowledge, concluding that "we have to start from a position of acknowledging the huge amount of knowledge and expertise that teachers already have" (2010, p. 34). The current research study takes this stance further, aiming, like both Coxhead and Gleeson, to "make visible the nature of practitioner knowledge" (Burns & Richards, 2009, p. 4).

2.4.4 Summary

This section has explored how conditions within secondary school promote vocabulary development, while noting the central role vocabulary plays in this environment. An important dimension of this study is to enquire into teacher perceptions of vocabulary in the secondary school context with particular reference to English as a curricular subject.

2.5 Conclusion

The studies reviewed in this chapter indicate that factors including key adolescent developments and increasingly advanced levels of literacy place secondary school students in an optimal phase for advanced vocabulary acquisition. Current research has revealed that significant development in the areas of lexical variation, lexical sophistication and lexical diversity occurs between the period of 12-17 years, however, little has been determined as to what developments occur within that period. Additionally, while research has highlighted the value of looking at vocabulary development from the perspective of the teacher, few studies have included this element in their enquiry. The following research questions are designed to address these gaps in the literature: What do cross-sectional analyses of secondary school writing reveal about vocabulary development within the period of adolescence? What are New Zealand English teachers' perspectives on adolescent lexical development during the secondary school years? The next chapter outlines the methodology designed to find answers to these research questions.

Chapter 3

Methodology

3.1 Introduction

This methodology chapter is framed according to the quantitative and qualitative approaches used to enquire into the research problem of lexical development during the period of adolescence as evidenced in student writing. Thus the first half details the lexical richness approach to analysis of student written texts used to address research question one. It details the participants and the gaining of informed consent from principals, teachers, students and parents, the procedures used to collect written data, the preparation of the texts for analysis, together with the analytical tools and statistical analysis procedures. Importantly, this section gives a quite detailed account of methodological approaches to the analysis of lexical variation, lexical sophistication and lexical density. The second half of the chapter covers the qualitative approach used to address research question two, through an investigation of teacher perspectives on adolescent lexical development in school settings. It provides details of the participants, ethical procedures, interview procedures and the thematic approach used to analyse the data. Concluding comments focus on key aspects of the methodology used in this study.

3.2 Method 1: Lexical Richness Analysis

3.2.1 Introduction

This section outlines the research design developed to answer research question one: What do cross-sectional analyses of secondary school writing reveal about vocabulary development within the period of adolescence? It describes the building of a data set of written essays produced by New Zealand secondary school students. A total of eight schools agreed to participate in the study. Once informed consent was obtained, including from parents in the case of the younger age group, students were invited to provide written essays which had formed part of their routine class written work in the subject of English. The students contributing to the study (N=141) were from the following three year levels: Year 9 (age 13-14), year 11 (age 15-16), and year 13 (age 17-18). The

texts were analysed according to three different measures of lexical richness: lexical variation, lexical density and lexical sophistication. This section explains this research design in greater detail, including discussions behind the approach and methodological considerations.

3.2.2 Participants

Recruiting and sampling

Out of 29 secondary schools contacted in the Wellington and Manawatu regions, five participated in this part of this study, with informed consent obtained first from principals, in some cases heads of department, and then teachers. Within participating schools a total of 18 classes were visited, and students who were interested in participating were given an information sheet and signed a consent form (participants under age 16 were required to have a parent or guardian sign on their behalf). See appendices 2 and 3 for copies of the information sheets and consent forms. The sample was based on three academic year level groups representing three different stages of secondary school education, the beginning, middle years and final year of secondary school (see table 3.1). The separation of each group by one year level has two benefits: signs of development may be more salient, and the entire age range from 13 to 18 is captured. All participants who fell outside of the typical age range for their year level as indicated in table 1, as well as those whose first language was not English, were not included in the study.

Table 3.1 Selected year levels for data collection

Year 9	Year 11	Year 13
Age 13-14 First year of secondary school	Age 15-16 First year of NCEA (National Certificate of Educational Achievement) examinations	Age 17-18 Final year of secondary school/NCEA examinations

Demographics

Demographic details of participants were obtained through participants' completion of a demographics form (see Appendix 10). The participants ($N = 141$) included 46 year 9s (mean age = 13.13), 44 year 11s (mean age = 15.3), and 51 year 13s (mean age = 17.14). The ethnic profile of the sample is as follows: 66% European/Pakeha, 10% Maori, 16% Asian, 3% Pacific Island, and 5% "other". 34% of participants were male, and 66% percent were female. All participants included in the study reported that they were native speakers of English.

3.2.2 Participating classes

In order to reliably compare students' outputs, it was necessary for the written essays to be produced for the same school subject. As a result, only English classes were invited to participate in this study. There were several factors behind the decision to look only at English, as opposed to other subjects. Firstly, in most schools English is compulsory until the penultimate year of high school, promising a more representative sample than elective subjects, which may attract students of particular ability, or career orientation. Furthermore, there is less specialised vocabulary in English than in other subjects, such as Biology or Economics: Coxhead's (2012) vocabulary load study of English secondary school texts suggests the load is 8,000-9,000 word families, mirroring findings from Nation's (2006) vocabulary load findings for newspapers and novels. This was an important consideration as looking at subjects requiring high levels of specialised vocabulary may not capture an accurate representation of students' vocabulary levels. Yet the subject also requires a level of higher-order thought and analysis, in essays of comparison and contrast for example in which students are expected to convey complex ideas and arguments. Importantly, it is writing tasks such as these that have been identified as promoting more advanced and increasingly precise vocabulary use on the part of students (Wolsey, 2010).

There was a desire to keep the sample relatively homogeneous in terms of socioeconomic status; this was in line with other studies such as those using the Spencer project corpora, which confine their sample to higher socio-economic populations (e.g. Stromqvist et al., 2002; Ravid, 2006; Bar-Ilan & Berman, 2007; Berman & Nir, 2007, 2010; Johansson, 2008). The school decile system as assigned by the Ministry of Education based on a rating from decile 1-10 was used as an indication

of the socio-economic background of students attending the school: decile 1 represents the 10% of schools with the highest proportion of students from low socio-economic communities, whereas decile 10 represents the 10% of schools with the lowest proportion (Ministry of Education, 2013). The dispersion of school decile and year level is indicated in Table 3.2. The limits of the study in terms of its more narrow focus on decile 9 and 10 schools are addressed in the conclusion.

Table 3.2 Student writing samples: Year level and school decile

		School Decile		Total
		9	10	
Year	9	N=28	N=18	46
	11	N=34	N=10	44
	13	N=36	N=15	51
Total		N=98	N=43	141

It was assumed two high-decile groups would constitute a homogeneous sample; however, there was a concern to verify this statistically. In order to address the imbalance of decile ratio, particularly in the year 11 group, Welch's tests were performed, confirming that the variances of the population of the groups were equal.

3.2.3 Collection of written data

I visited participating English classes during class time, where I outlined the study to the students and invited participation. To avoid the possibility of students modifying their work in order to gain higher scores, students were told that the study looked at how writing changes across secondary school. They were also told the study was fully confidential, and were assured that the results from the study would have no bearing on their school grades. In general, students seemed interested in the study and were willing to participate.

After completing consent forms and demographics forms, students were invited to submit a piece of writing they had completed for English class in the same year. The writing samples collected ranged from 200-1,500 words, growing in length across the year level groups. Writing samples were all expository essays written in response to a text (typically a film, short story or novel) studied in-depth over a number of weeks. The texts were gathered over a period of five months, from May to September 2013. A sample of texts collected at each year level can be found in appendices 4, 5 and 6. All texts are authentic pieces of writing produced as one of the requirements of the New Zealand secondary school curriculum, to enhance the ecological validity of the study. Most importantly, a key goal of this study is to capture an accurate picture of how vocabulary develops during adolescence, and with that came a motivation to look at the sort of writing adolescents do in fact do. There was a further concern that in an experimental situation participants may modify the language used if they know it is to be analysed later. The current research design eliminates this possibility by analysing writing completed prior to research participation.

3.2.4 Lexical richness analysis

For each text collected from participants, three versions were created: one where all the proper nouns and punctuation were removed (for the lexical sophistication analysis), one where all proper nouns were replaced with the word 'noun' (for the lexical density analysis), and one saved as a .txt document (for the lexical variation analysis). The texts were then analysed for lexical variation, lexical sophistication and lexical density scores using computational tools of analysis described in the following sections. Results were recorded on an Excel spreadsheet alongside the participant's demographic information, including their gender, age, year level, school decile, and ethnicity.

Tools of analysis: Lexical variation

The traditional method of measuring the lexical variation of a text is to measure its type-token ratio (TTR), with higher levels of word types per token indicating higher lexical variation. While this measurement gives a good indication of the extent to which a text is lexically diverse, a major issue is that texts of different lengths cannot be compared: the longer the text, the more tokens there will be, yet repetition of the same word types also becomes more and more likely. This fundamental flaw of the TTR unit of measurement has been widely noted (e.g. Biber, 1991; Meara

& Bell, 2001; Malvern et al., 2004; McCarthy & Jarvis, 2007, 2010; Johansson, 2008; McCarthy & Jarvis, 2010; Koizumi, 2012; Crossley, 2013), and as such, it is no longer a favoured method of lexical variation measurement.

The tool of measurement selected for this study employs the TTR unit of measurement, but offers a solution to the text length issue. The tool, Measurement of Textual Lexical Diversity (MTLD; McCarthy & Jarvis, 2010), avoids the issue of text length by analysing word strings rather than the text as a whole. Texts are analysed for sequential word strings that reach a TTR value of 0.72 or below (with the mean length of these word strings indicating how lexically varied the text is). A key benefit of using MTLD in this study is that text length does not need to be controlled for. A validation study by Koizumi (2012) confirmed that MTLD can reliably compare texts of any size greater than 100 words. McCarthy and Jarvis (2010) likewise found that MTLD was the only tool out of three tested (MTLD, Vocd-D, and Maas) to produce reliable results unaffected by text length, the shortest texts in the study consisting of 100 tokens.

Text length is an important covariate in this study, as secondary school teachers informed me that written texts typically become longer across the secondary school years. The controlling of text length (e.g. analysing only 200 words of each text) would mean discarding important data, as well as jeopardising the reliability of the data: the structure of the text would be lost, and results may vary significantly depending on where in the text the 200 words were taken. Therefore, MTLD's ability to analyse texts of different lengths, and its proven performance in validation studies (McCarthy & Jarvis, 2010; Koizumi, 2012), were key reasons for its use in the current study.

Tools of analysis: Lexical sophistication

In the current study two indices of lexical sophistication were employed: use of mid- and low-frequency words (referred to here as lower-frequency words, as distinct from high-frequency words), and use of academic words. Each of these indices is now discussed in turn.

1. Lower-frequency words

Each essay was analysed for the amount of lower-frequency words used in the text. To do this, the text was run through the tool Vocabprofiler (Cobb, n.d.) to calculate the percentages of words from

each of the frequency bands of the BNC-20 (Nation, 2004). As Cobb (n.d.) explains, "Vocabulary Profilers break texts down by word frequencies in the language at large, as opposed to in the text itself"; each essay is therefore compared to frequency norms as represented in the BNC-20. The BNC-20 consists of 20 frequency bands of around 1,000 word families each, taken from the British National Corpus, in descending order from most to least frequent. To measure the amount of lower-frequency words used in the text, I calculated the percentage of words used beyond the first 3,000 words of the BNC, based on the BNC-20 analysis from Vocabprofiler. Below I will discuss the decision to locate the frequent/non-frequent cut-off point at 3,000 words.

The decision to locate the frequent/non-frequent cut-off point at 3,000 words took some deliberation due to current discords in the literature on this very subject. While the traditional dividing line for frequent/non-frequent being around the 2,000 frequency band (Milton, 2009), Schmitt and Schmitt (2013) argue that a more suitable model includes the first 3,000 words of English in the 'high frequency' group, with 3,000-9,000 constituting 'mid-frequency' words, and anything beyond the 9,000 band belonging to the 'low-frequency' category. To verify which cut-off point would be more appropriate for the current study, I trialled both the beyond-2000 words and beyond-3000 words measures. Thirty writing samples from each year level were measured through Vocabprofiler for the percentages of words used beyond the first 2,000 frequency bands of the BNC-20, and beyond the first 3,000 frequency bands. The results of this trial revealed greater differences in the averages across year levels for the beyond-3000 words measure than for the beyond-2000 words, confirming the value of the 3,000 word cut-off point for the current study.

2. Academic words

The second index of lexical sophistication employed in this study is the use of academic words. Each text was analysed through the tool Vocabprofiler (Cobb, n.d.) for the percentage of words used from the Academic Word List (AWL) (Coxhead, 2000). The Academic Word List consists of 570 word families which are widely and frequently represented in tertiary-level academic texts. Given Nippold's (2007) assertion that acquisition of academic vocabulary is a key component of later language development, measurement of students' productive knowledge of words from the Academic World List is an important component of this study. Further, it was considered important

to measure students' productive knowledge of these words given the school-based focus of this study and the academic nature of the written texts studied.

These two measures of lexical sophistication are seen as complementary: data from the BNC-20 index indicates the amount of mid- and low-frequency words used, while data from the AWL index indicates the level of academically-oriented words. As the AWL is not solely frequency-based, it is expected that while the results from the BNC-20 and the AWL may correlate to some extent, these measures will still be distinct.

Tools of analysis: Lexical density

Each text was given a lexical density score by calculating the ratio of content words to the total number of words in participants' written texts. This calculation was carried out using the tool Lexical Complexity Analyser (LCA) (Lu, 2012). LCA has a standard categorisation procedure for content words, using the following criteria (Lu, 2012, p. 192), given in Table 3.3. LCA firstly part-of-speech (POS) tags the texts using the Stanford tagger (Toutanova, Klein, Manning, & Singer, 2003), meaning each token in the text is categorised as to its part of speech (e.g. adjective, adverb, etc.). The tagged text is then lemmatised, before a python script calculates the content word ratio of the written text.

Table 3.3 Content words (Lu, 2012)

Content words
<input type="checkbox"/> nouns <input type="checkbox"/> adjectives <input type="checkbox"/> verbs (excluding modals, auxiliaries 'be' and 'have') <input type="checkbox"/> adverbs with an adjectival base, including: <ul style="list-style-type: none"> - those that can function as both an adjective and adverb (e.g. fast) - those formed by attaching the –ly suffix to an adjectival root (e.g. particularly)

3.2.5 Statistical analysis

A series of one-way analysis of variance (ANOVA) tests were conducted to determine whether there were any significant differences between the mean scores of the three year groups for each of the three lexical richness criteria. Follow-up post-hoc Tukey tests were then used to establish which group-mean comparisons were statistically significant.

3.3 Method 2: Teacher perspectives

This section describes the methodological approach taken to answer research question two: What are New Zealand English teachers' perspectives on adolescent lexical development during the secondary school years? To answer this research question, individual interviews were carried out in school classrooms, workrooms, or staffrooms. Seven teachers in five schools drew on their professional knowledge and experiences in relation to approaches to vocabulary in the classroom, factors underpinning vocabulary development, observations of lexical development across the secondary years, and links to achievement. This section discusses the research design in greater detail.

3.3.1 Participants

The seven teacher participants involved in this study were all teachers belonging to a school which was initially recruited for the quantitative phase of the study. When approached about the student written texts part of the study outlined in the previous section, teachers were also asked if they would like to take part in an interview on their perspectives of vocabulary development during secondary school. All interviewees were English teachers currently teaching at least one of the year levels investigated in the study (9, 11 and 13), and all interviewees except one were teachers of the classes who provided the data for research question 1. The exception was an English Head of Department who showed a keen interest in the study, and was willing to take part in an interview. However, he was teaching a year 12 class so his students could not be included in the study. Table 3.4 indicates the profiles of the teachers, representing a range of experience levels; this was a desirable outcome as Coxhead (2011) found that years of experience affected teachers' approaches to vocabulary in the secondary school classroom. All names of teachers and schools are

pseudonyms.

Table 3.4 Teacher Profiles

Name	School	School decile	Years of experience
Rachel	Northgate Girls' High	9	Around 25
Bridget	Northgate Girls' High	9	9
Anne	Eastwood College	2	Around 20
Lou	West Central Boys' College	10	13
Kate	Fairview Boys' High	9	Less than one
Meredith	Fairview Boys' High	9	12
Jane	Hawthorne Girls' College	10	22

3.3.2 Interview procedures

Prior to the interview, all teachers had read an information sheet and signed a consent form. Interviews were generally carried out in a quiet setting chosen by the teachers such as the staffroom, an office or empty classroom. The ten interview questions invited teachers to reflect on vocabulary and lexical development in the secondary school context (see Appendix 9 for interview questions). The focus of the questions was kept relatively open in order not to constrain responses and to allow teachers to draw quite widely on their perspectives and experiences. Some teachers were also asked additional questions, as prompts or clarification requests and all were invited to add any further comments at the end of the interview.

In terms of their response to the interview, teachers were generally keen to talk, and frequently indicated that they felt vocabulary was an important aspect of secondary school education, in line with findings from Coxhead's (2011) study looking at secondary school teacher perspectives of vocabulary teaching. Some also showed their teaching materials, or talked about students'

vocabulary development beyond their immediate classroom practices, e.g. in relation to home settings, a school-wide approach, or students' free time activities. The interviews lasted for periods of 20 minutes to 45 minutes. They were gathered over a period of four months, May to August 2013.

3.3.3 Analysis of interview data

The data were transcribed, examined, and a holistic thematic analysis was carried out. Comments made on the data were converted to key words, including *explicit focus, curriculum, out-of-class learning, achievement, reading, student attitudes, individual variation*. Key words that occurred with some frequency, or were particularly salient, were organised into themes which were relevant to the research question. A trained inter-rater was used to independently code a portion of the data. After being briefed on the aim of the study and the nature of the data, the inter-rater was given a demonstration as to how the interview data had been coded. The inter-rater was then given twenty excerpts from the interview data, and was asked to thematically categorise the data. This analysis yielded an inter-rater score of .7. Discrepancies in decisions around the thematic categorisation of the data were discussed, and agreement was reached as to the appropriate categorisation of the data in question. As the interviews were conducted with the goal of representing teacher views, member-checking was an important part of this phase of the research. Teacher participants were sent the written up findings outlining their views expressed in the interviews, and were asked to verify that their views had been well-represented. All teachers confirmed that their views were accurately depicted.

3.4 Conclusion

The methodological framework developed in this study draws on both quantitative and qualitative approaches to investigate lexical development within the period of adolescence in school settings. By way of concluding comments, two further points can be made. The lexical richness analysis as used here brings together a range of analytical tools and measures of lexical variation, lexical sophistication and lexical density to investigate lexical development through a cross-sectional analysis of student written texts. A situated approach to understanding lexical development is taken

through the use of interviews carried out with seven teachers in five schools based on their understandings of the nature of lexical development, influences on that development, and the overall importance of vocabulary. The results relating to the cross-sectional analysis are now presented in the next chapter.

Chapter 4

Findings I: Lexical Richness in Student Writing

4.1 Introduction

This chapter presents the findings from cross-sectional lexical richness analyses of secondary school student writing. These findings are based on an analysis of the 141 texts gathered across the three year levels. It begins with ANOVA analysis based on mean scores for each year level according to the following: lexical variation, lexical sophistication and lexical density. Additional analyses are then presented based on dispersion data to supplement the mean score findings. The chapter ends with a summary of the quantitative findings.

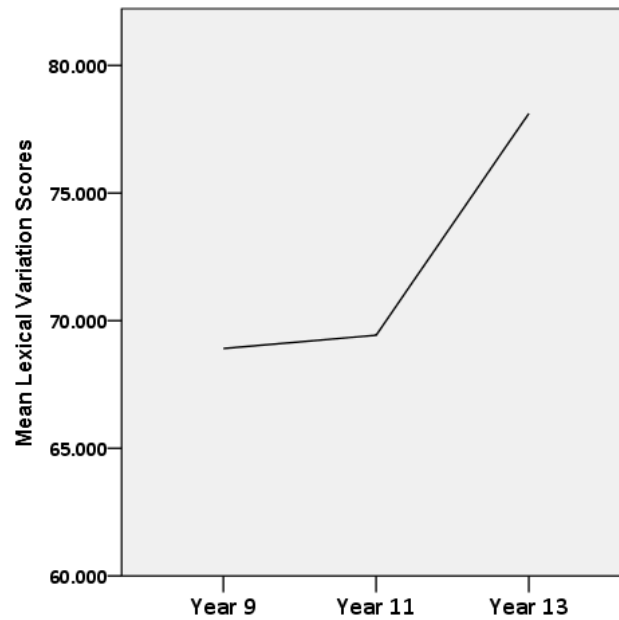
4.2 ANOVA tests based on mean scores

A central goal of this study was to determine what differences could be observed in the lexical richness of academic writing produced by three different year level groups in order to derive a picture of lexical development across adolescence. To achieve this, a one-way analysis of variance (ANOVA) was performed for each of the aspects of lexical richness examined in this study. Lexical richness development was evident in the data, with ANOVA tests yielding statistically significant effects for all four variables: lexical variation $F(2,138) = 7.652, p = .001$, lexical sophistication (academic) $F(2, 138) = 47.986, p < .001$, lexical sophistication (beyond-3000) $F(2, 138) = 37.025, p < .001$, and lexical density $F(2, 138) = 11.539, p < .001$. Trends from Tukey test results strongly indicated that marked lexical development was evident between years 11 and 13 in the data set, with minimal development prior to this period. These findings, discussed below in more detail, display remarkably similar patterns across the three measures of lexical richness.

4.2.1 Lexical variation

The year 13 group had an exponentially higher mean MTLTD lexical variation score than the other groups, with little difference between years 9 and 11, as indicated in Figure 4.1. A post-hoc Tukey test revealed a significant difference in lexical variation scores between the year 11 and 13 groups ($F(2, 138) = 7.652, p = .004$). On the other hand, the difference in the mean scores of the year 9 and year 11 groups was statistically insignificant ($p = .981$).

Figure 4.1 Mean lexical variation scores



In Table 4.1, examples 1, 2 and 3 from written essays at years 9, 11 and 13 demonstrate the increasingly varied lexical usage from year 11 to year 13 in this study.

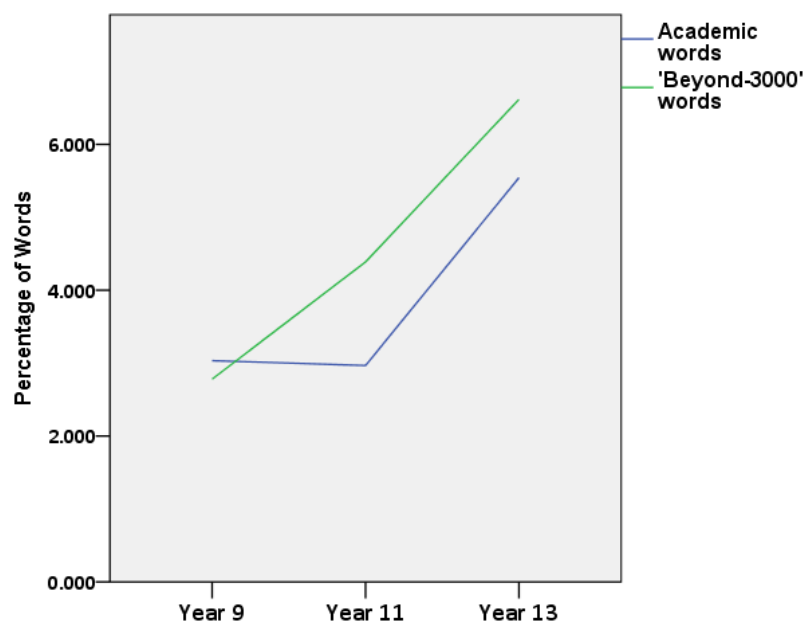
Table 4.1 Lexical variation samples

<p>(1) Year 9 essay response</p> <p>Firstly I admire Ness because she is determined. Ness showed determination when she decided she wouldn't let Dev die. I admired Ness's determination because teenagers are not normally put in a situation like her and have to take on that amount of responsibility.</p>
<p>(2) Year 11 essay response</p> <p>The film Juno by Jason Reitman is a film about a teenage girl named Juno who faces teenage pregnancy. During her pregnancy she has to make mature decisions and face the idea that not everything goes as planned. A character in the film that changes is Vanessa Loring. The director portrays the development of her character using costume.</p>
<p>(3) Year 13 essay response</p> <p>People living on the margins of society always have most intriguing stories, and this is certainly true of Briony Tallis, the protagonist of Atonement (2007). The truth of the film's narrative is revealed by Briony in Part Four, or the Coda, of the film: all that the audience has viewed since that day has been her recreation of events until that time.</p>

4.2.2 Lexical sophistication

Consistent with lexical variation findings, marked development was observed between years 11 and 13 in both ‘beyond-3000’ word use ($F(2, 138) = 37.025, p < .001$), and in academic word use ($F(2, 138) = 47.986, p < .001$). Figure 4.2 shows that in terms of academic word use there was no development in this data set between years 9 and 11, with a Tukey test revealing no significant difference between the mean scores of years 9 and 11 ($p = .976$). On the other hand, significant development was observed in the use of ‘beyond-3000’ words between years 9 and 11 ($p = .002$). It is worth noting that this is the only aspect of lexical usage which displays development from year 9 to year 11 in this study.

Figure 4.2 Mean percentage of academic word use and ‘beyond-3000’ word use across year levels



In Table 4.2, examples 4, 5 and 6 from written samples at years 9, 11 and 13 respectively illustrate these developments, with academic words in bold, and ‘beyond-3000’ words underlined. These extracts, while short, demonstrate the manner in which increasing levels of academic and lower-

frequency words are incorporated into the written texts at each year level. While at year 9 only one AWL item is used, *assume*, by year 11 three academic words are employed, and at year 13 six such words are used. Likewise, though less markedly, the year 9 text features no ‘beyond-3000’ words; in the year 11 text, one word is included in the excerpt, and at year 13 there are two.

Table 4.2 Lexical sophistication samples

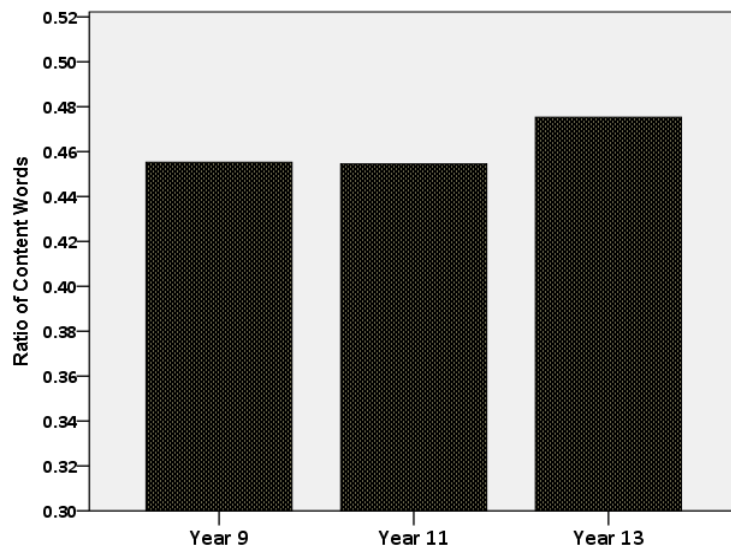
<p>(4) Year 9 essay response</p> <p>Mrs Wilson assumes Boyd’s father is the muscle of the factory he works in instead of the brains of the factory. An example of this is when she says, this is important because this means that Mrs Wilson is assuming Boyd’s father must be big and strong instead of smart.</p>
<p>(5) Year 11 essay response</p> <p>I was surprised how negative Sylvia Plath’s “Family Reunion” was; because of the language and techniques used to write this poem to show us readers how much Plath dislikes her family and family <u>reunions</u> even though they are supposed to be a positive event.</p>
<p>(6) Year 13 essay response</p> <p>World War II brought about an <u>intrinsic</u> awareness of human <u>finitude</u> and the effects a confrontation of mortality has on our consciousness. ‘The Love Song’ of Alfred J. Prufrock and ‘No Exit’ both illustrate how facing one's own death is radically dissimilar from all other personal, human concerns.</p>

4.2.3 Lexical density

Figure 4.3 indicates once again that marked development occurs between years 11 and 13, but not in the years prior to that. While a Tukey test showed that the difference in mean scores between years 11 and 13 was found to be highly significant ($F(2, 138) = 11.539, p < .001$), the difference in

the mean scores between years 9 and 11 was not statistically significant ($p = .991$).

Figure 4.3 Mean ratio of content word use across year levels



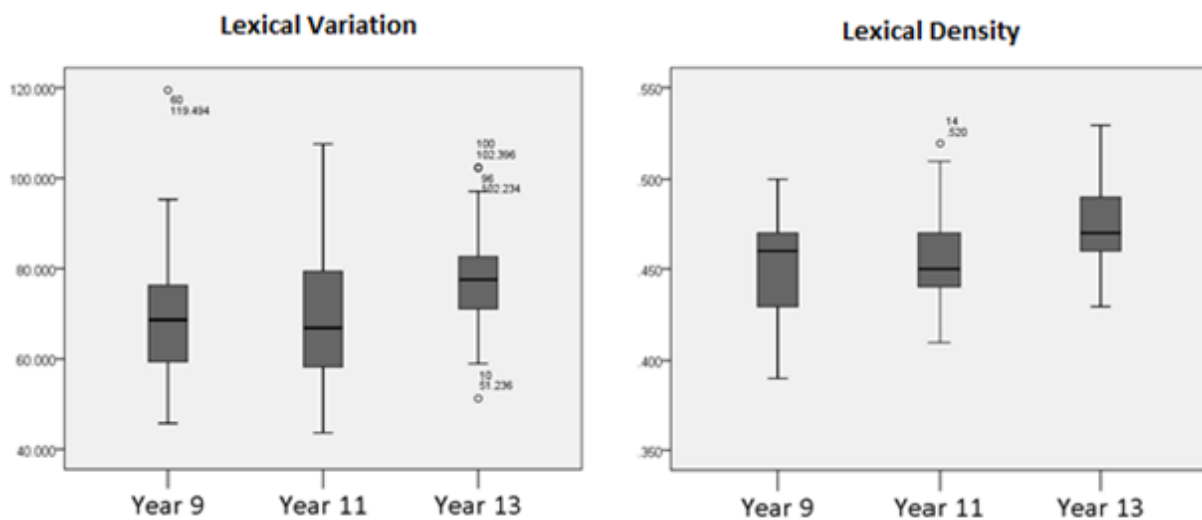
4.3 Dispersion Results

Previous studies investigating adolescent lexical development have generally not focussed on the dispersion of scores within participant groups. However, given that a key aim of this study is to provide a picture of lexical development across adolescence, it was important to look at the overall shape of distribution to supplement the mean score findings discussed in the previous section with information about how the populations performed as a whole. Accordingly, standard deviations are also presented in this section. Overall, there was considerable variation in the scores within year level groups, though the degree of dispersion varied across year levels and areas of lexical richness.

4.3.1 Dispersion of lexical variation scores

The year 11 group had the largest standard deviation ($SD = 15.10$), followed by year 9 ($SD = 13.69$) then year 13 ($SD = 10.35$). The lexical variation box plot (see Figure 4.4) reflects this variance in performance, displaying a wide distribution of mean scores at year 11. At year 13 the gap between the highest and lowest performing students had narrowed.

Figure 4.4 Dispersion of mean scores of lexical variation and lexical density



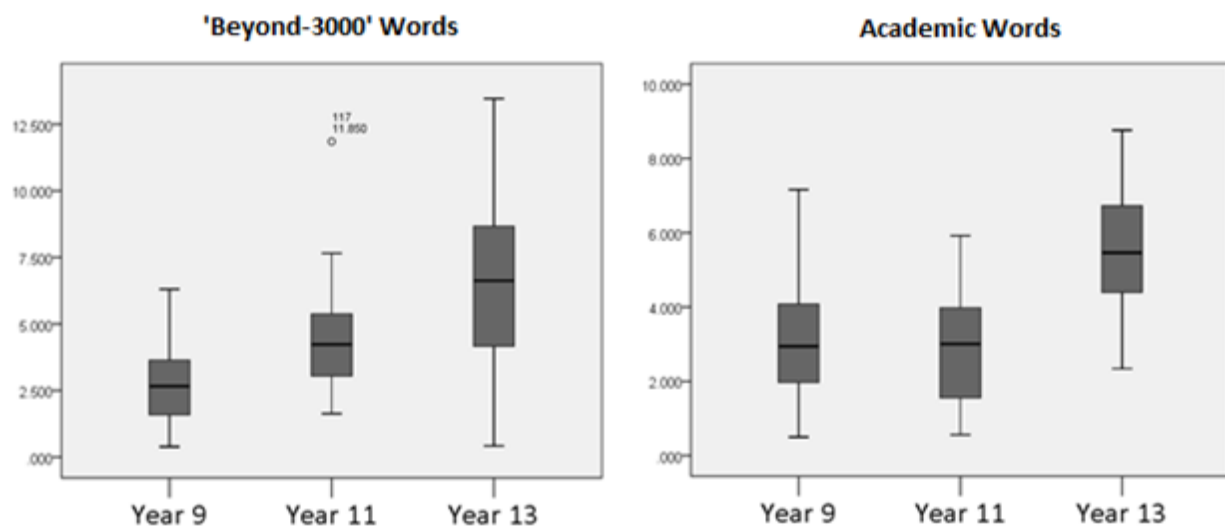
4.3.2 Dispersion of lexical density scores

In contrast to lexical variation, the range of lexical density scores remains relatively consistent across year 9 ($SD = 0.26$), year 11 ($SD = 0.24$) and year 13 ($SD = 0.22$), as demonstrated by the dispersion shown in Figure 4.4. Therefore, it appears that students within the same year level do not display the same level of differences in their use of lexical density compared to other aspects of lexical usage explored in this study.

4.3.3 Dispersion of lexical sophistication scores

The ‘beyond-3000’ words box plot (see Figure 4.5) indicates that the extent of usage of ‘beyond-3000’ words varies greatly at year 13; this is also observed in the markedly higher standard deviation at year 13 ($SD = 2.90$) compared to years 9 and 11 ($SD = 1.51$; $SD = 1.88$). Some of the year 13s in the lower quartile performed similarly to the lowest-performing year 9s, while the participants in the upper quartile group performed at exponentially higher levels than the other two groups.

Figure 4.5 Dispersion of percentages of ‘beyond 3000’ and academic word use



In contrast, the ‘academic words’ box plot (see Figure 4.5) shows relative similarity in the dispersion of percentage scores across the three groups (apart from heightened performance in the upper quartile of the year 9 group). This consistency is reflected in the moderate standard deviation scores for academic word use across years 9, 11 and 13 ($SD = 1.44$; $SD = 1.48$; $SD = 1.52$). Once again these findings indicate that the acquisition of ‘beyond-3000’ words and academic words are distinguished in terms of lexical development during adolescence in this study.

4.4 Conclusion

The quantitative findings discussed in this section reveal the time between years 11 and 13 (age 15-18) constitutes a period of significant lexical development in the areas of lexical variation, lexical sophistication, and lexical density. In contrast, the time between years 9 and 11 (age 13-16) only shows development in the area of use of lower-frequency words (beyond the first 3,000 words of English). The following chapter presents the qualitative findings from study: it explores thematically-organised teacher perspectives on lexical development across secondary school that emerged through teacher interviews.

Chapter 5

Findings II: Teacher Perspectives on Lexical Development

5.1 Introduction

The seven teachers who took part in the interviews discussed ways in which vocabulary development was apparent across secondary school, and articulated their perspectives on adolescent lexical development during the secondary school years. In addition there were a number of themes which defined how secondary teachers talked about lexical development during secondary school years: the factors which give rise to acquisition processes, reasons behind individual variation in acquisition, the importance of out of school experiences, and the overall significance of lexical development within the secondary school context. This chapter reports on these findings, which directly address research question two.

5.2 Identifying development across the year levels

A theme common to all seven teacher interviews was the clear consensus that students' vocabulary size increases perceptibly from year 9 to year 13. When asked about stages of development at particular year levels, progression was noted in two key areas.

Firstly, students were seen to become increasingly oriented towards academic vocabulary across the secondary school years. Bridget (Northgate Girls' High School) gave the example of year 9 students not picking up on semantic subtleties of more advanced vocabulary such as the distinction between the words *show* and *portray*. In contrast, by year 11 students in most cases have begun using more sophisticated, academic language. Bridget continues:

year 11s are more willing to take some risks, they are identifying the key words that they have to repeat, use, explain, there's a lot more happening there

Her comments indicated that during high school students increasingly take ownership of their vocabulary use, and display metalinguistic awareness in seeking out appropriate vocabulary for their academic tasks. The risk-taking aspect was mentioned by two other teachers as a quality that develops across secondary school, particularly from year 11 onwards as students begin NCEA and need to try out more advanced vocabulary in line with more demanding curricular requirements. The influence of the curriculum will be revisited at several points in this chapter.

A second, related area of development identified in the teacher interviews was the increasing control on the part of students of their developing vocabulary resources. As an example, Anne (Eastwood College) described little difference in the vocabulary levels of her year 9 and 11 classes, except noting that by year 11 students were confident in putting words together. However, between years 11 and 13 she argued there was a marked change as students “were more able to control and develop their ideas through their vocab”. Lou (West Central Boys' College) shared that students around years 11 and 12 often attempt to use more sophisticated vocabulary without full understanding of the word's meaning or connotations, yet by year 13 they have become more accustomed to using advanced vocabulary, in that “most of them are comfortable with semi-academic language and searching around for the precise word”. While commenting on lexical development teachers also identified both situational and cognitive influences during adolescence and these are the subject of the next section.

5.3 Factors underlying lexical acquisition during secondary school

During the course of the interviews teachers emphasised the influence of the curriculum on lexical development, referring specifically to such factors as subject specialisation, increasingly complex tasks and assessment expectations. Alongside these situational influences, teachers also made reference to the influence of evident cognitive developments which take place during adolescence (section 5.3.2).

5.3.1 Curriculum demands: “They’ve done well in level 1, then the reality hits in level 2”

This comment from Kate (Fairview Boys High) refers to the impact of the increasing challenges

and demands of the curriculum in senior secondary school, from level 1 (year 11, age 15-16), to level 2 (year 12, age 16-17). It was part of a broader discussion where in the course of the interviews teachers repeatedly made a distinction between the vocabulary requirements of the senior level (years 11, 12 and 13; the "NCEA years") and the junior level (years 9 and 10). In all of this year 11 was identified as a significant transitional year, a point discussed in more detail later in this chapter.

Four of the teachers attributed changes in vocabulary development to the difference in subjects at junior and senior levels. For example, both the broadening and specialisation of subjects available from year 11 onwards (such as history, media studies, accounting) were identified by Meredith (Fairview Boys' High) as key features of the senior curriculum influencing vocabulary acquisition. In a similar vein, Bridget argued that it was subject-specific vocabulary, particularly in the higher year levels, which influenced students' vocabulary use, and whether their work was assessed as 'not achieved – achieved – merit-excellence':

I think as you progress through secondary school the words you use begin to affect your achievement standards.... definitely for [subjects like] biology, art history, history, dance...

A more widespread view, in fact the view of all teacher participants, was that increasing curriculum demands required students to comprehend and use more advanced vocabulary, and in more complex ways, and it was this that also accounted for lexical development. Jane (Hawthorne Girls' College) summarises the factors behind year-level related developments thus:

it's partly the requirements, the texts they're studying, the vocabulary will go up every year – the range, the complexity. Also the requirements for their writing.

The increased expectations intensify at year 11 and were reported as affecting explicit messages given to students about vocabulary. Bridget (Northgate Girls' High) referred to how she guided students and emphasised the significance of vocabulary for assessment:

we're also introducing them to new concepts and saying, the pressure's on at year 11. If you don't use these words in these essays, if you don't use the key words, you won't be able to prove your knowledge to the marker...

Task requirements, particularly at year 11, were seen as eliciting more sophisticated vocabulary use, including for example the need to use words that describe subject-specific concepts (such as *soliloquy*). Teachers noted a further elevation in task requirements at Year 12 and then year 13 in terms of the language needed for essay writing, including words that express semantic relationships (such as cause and effect, implications, conclusions), and words that show the ability to analyse and critically reflect.

As referred to earlier, moving from year 11 to year 12 was identified as a key developmental stage in the teacher reports, given the significant increase in curriculum demands which require students to progress accordingly. Three teachers added that the texts students are required to read and study become increasingly sophisticated as students progress through the final three years of secondary school. It was emphasised that this progression in difficulty levels of texts is less apparent in the earlier years of secondary school; for example, the same short stories are able to be used across years 9 and 10 and sometimes into year 11, the difference being that “you ask kids to get a bit more out of it” (Anne, Eastwood College).

The influence of the curriculum on vocabulary growth is thus seen as applying particularly from year 11, that is Level 2 onwards, and is linked to increasing subject specialisation, complexity of reading texts, task demands and assessment requirements.

5.3.2 Cognitive developments

The cognitive developments that occur during secondary school years were identified by five of the teachers as being closely linked to vocabulary development. Lou (West Central Boys' College) commented that changes in vocabulary were part of students' growing cognitive skills, arguing that this was evident as they moved from concrete to more abstract modes of thinking. An interesting example of this was given by Anne (Eastwood College) namely the difference between

church as in a building and *church* as an organisation or institution. She commented that students need to be developmentally ready in order to acquire abstract meanings, adding that:

these sorts of things can cause a bit of difficulty... surprisingly a lot of them don't seem to pick it up through exposure. They need to have that explicit teaching.

From a slightly different perspective, Kate (Fairview Boys' High) saw developing maturity across adolescence as running parallel to developing vocabulary, in particular with regard to students becoming increasingly outward-looking and curious about the world as reflected in the texts they access. She describes this development with regard to the changing nature of the texts students engage with across secondary school, as follows:

Year 12 Year 13 you start reading a newspaper, you start reading Time magazine, texts that are more developed, you start watching R16, R18 movies....in year 9 the themes are still quite childish and they're not being extended in the same way, they're still kids in some way whereas year 11 they're thinking life, society.... they're reading Catcher in the Rye... so themes mature and therefore the language... they suddenly realise there's a world out there and they should start finding out about it.

In both cases these teachers saw cognitive developments as necessary for students to engage with and use language which until that point had remained inaccessible, with Kate (Fairview Boys' High) joking that "the teacher keeps telling you 'reflect on the question' and you have no idea, you think 'I don't know what that means'".

A further dimension of the relationship between vocabulary growth and cognitive development was the critical issue of social development. The heightened importance of the peer group during adolescence, coupled with increased self-consciousness was seen by teachers as potentially having a negative impact on vocabulary development: for students there was a social stigma around having a large vocabulary. Bridget (Northgate Girls' High), for example, referred to negative stereotypes as follows:

If you're using big words you're a geek. There's a whole series of names and labels that get attached, and so kids don't use those words. And when it comes to producing work for a teacher where those words are really, really important, they don't have those words to draw on. It's not readily available. It's really unfortunate.

Bridget's comment points to differences among students in terms of attitude towards vocabulary and how this may impact on lexical development. The following section explores further the more differentiated, individual nature of progress in vocabulary during secondary school.

5.4 Where acquisitional trajectories vary

It became apparent during the interviews that generalisations as to the developmental stages across year levels could only go so far, with four teachers emphasising that individual variation within year levels could be as strong as year level-related variation. To take one example, Kate (Fairview Boys' High) observed that differences were often more apparent between streams within a single year level of secondary school than between year levels. And both Kate and Anne (Eastwood College) shared the observation that the vocabulary of the top year 9 writers surpassed that of some year 11 students. Reading was identified as the main factor behind these differences, and related to this, students' openness to learning new vocabulary. Results concerning both these areas are now discussed.

5.4.1 Reading

When asked about factors influencing vocabulary acquisition, all teacher participants reported that a student's orientation to reading had a significant impact on their vocabulary size, as in the following:

I pretty much think it's exposure to reading in the wider sense. I mean I think pretty much reading novels, watching films, whatever it is, but just being exposed to language, hearing language, the hours spent reading, those sorts of things will definitely impact on their vocab acquisition. - Rachel, Northgate Girls' High.

The amount of time they spend reading, so the number of words that they read in a day, or a week or a year, or whatever. I suppose then all things being equal there's a natural intelligence thing as well but some of the research I've read for vocabulary says just increasing the reading mileage increases the vocabulary, and it does, and then that increases their academic achievement. - Meredith, Fairview Boys' High.

Reading was seen as underlying evident differences in vocabulary both across year levels, and among students of the same year level. Reflecting on the implications of reading widely, Kate (Fairview Boys' High) described the fluency of vocabulary use that comes with it: "so much essay writing is about how well you're able to communicate your ideas, so a kid who has read a lot has an idea of the word they can use at a particular place". In the same vein, Rachel (Northgate Girls' High) describes the implications of a lack of reading habits on students' linguistic development:

There are some that just remain resistant to reading and what I know of year 12 girls is that they've got through to year 12 by minimally watching the film of the book and making up the structures, but much of their own language or writing, there's not a lot there.

When asked about factors influencing vocabulary acquisition, all teacher participants reported that a student's orientation to reading had a significant impact on their individual vocabulary size. Exposure to reading, the hours spent reading and the number of words they read across a year were seen as critical; furthermore exposure to new words was also identified as important and hearing a range of language, though this latter point was only mentioned in three of the interviews.

5.4.2 Attitude and orientation to vocabulary

Alongside reading, teachers identified the importance of openness and interest in learning new words, arguing that this affected what was possible in vocabulary development; further dimensions were an awareness of vocabulary, "being conscious of it" as Anne (Eastwood College) observed, together with a willingness to learn. In the absence of these qualities, teachers argued, it was difficult for students to learn the more subject-specific, technical vocabulary of such areas as film-making or text analysis, even through explicit instruction.

Another factor some teachers identified as affecting vocabulary development is an openness to and interest in learning new words. Jane (Hawthorne Girls' College) summarised her viewpoint thus:

I definitely think the ones who are keen to succeed push themselves to extend their vocabulary, and they like to use new words in their writing that they've heard in class, or found, or read. They see it as a way to show that they're smart.

Anne (Eastwood College) saw openness to acquiring new vocabulary as a fundamental part of acquiring vocabulary from reading, commenting that "they have to read but they have to be conscious of it, they have to want to learn". She further adds that without an interest to learn new words, it is difficult for students to acquire vocabulary even through explicit instruction:

If they're not open to acquiring new words then it's very hard for them to learn the technical vocabulary of film making, text analysis, etc. because they're just not open to learning those words and in knowing how to acquire them and make them part of their productive vocabulary as well as their receptive.

Bridget (Northgate Girls' High) felt that students concerned with achieving top marks should be interested in improving their vocabulary, in that:

it's about what they want - if they want excellence, they need to have more sophisticated vocabulary, they need to read more complex books, they need to use more complex vocabulary in their conversations.

Thus, for those students who *were* open to learning new words, a further point was that in the final years of secondary school they had to continue to extend themselves.

5.5 The significance of vocabulary development in the schooling environment

As the current study has taken a situated look at lexical development in New Zealand secondary settings, this concluding section focuses on four key themes which can be seen as defining how secondary teachers talk about vocabulary in the school environment.

5.5.1 Vocabulary and accessing the curriculum

In interviews, teachers emphasised the importance of vocabulary in terms of students' ability to engage with and learn curricular content. A common theme teachers reported on was difficulties in accessing, reading and using a text if the level of vocabulary was too far beyond the students' current level. Lou (West Central Boys' College) for example made the following observation: "right now the kids are reading critical works and some of them are saying, well I don't even understand this". A further consequence of lower levels of vocabulary was that students could misunderstand texts and this was also an area that teachers found difficult to counteract.

Four teachers felt that affective factors such as demotivation were related to students' ability to engage with texts, as noted by Jane (Hawthorne Girls' College): "they get a bit put off with words" and Rachel (Northgate Girls' High) referring to the vocabulary of a novel studied in class: "some of the girls in this class couldn't connect with the text because they just found it too hard".

There were also concerns that some students may not be able to successfully complete assessments if they do not have the necessary lexical resources to understand the questions. Teachers outlined the issue that students need to have a strong understanding of the abstract vocabulary typically used in essay questions, which often includes metacognitive verbs such as *reflect*, *analyse*, *examine*, in order to answer the question in a manner that fits expectations of the marker. Furthermore, students with less vocabulary had the extra hurdle of deciphering what a question was asking, before setting about the task itself.

5.5.2 Vocabulary and expressing ideas: "sometimes they're at a loss to find the words to mirror their level of thinking"

A common thread throughout the interviews was the impact vocabulary had on students' ability to

convey their ideas. Six of the seven teachers reported a link between vocabulary knowledge and ability to communicate, seeing a lack of vocabulary knowledge as restricting the discussions possible in writing. The quote in the heading of this section was from Rachel (Northgate Girls' High) to which she added:

So if they're dealing with quite sophisticated ideas and they haven't got the vocab they're unable to develop those insightful comments.

This struggle was characterised by some teachers as failing to locate the right word, or lacking in precision in vocabulary use. A larger vocabulary was described as being important for conveying subtle ideas, or for exploiting the different connotations of words with similar meanings; without such precision, students were less able to achieve the depth required to gain higher marks. Anne (Eastwood College) added that beyond enabling students to convey their ideas, a strong vocabulary also helped students control and develop their ideas as they wrote. At times however, vocabulary knowledge was both essential and consequential: Bridget (Northgate Girls' High) emphasised that key words or subject-specific terms were crucial in assessments (such as literary terms or technical terms), and could not be substituted with more general vocabulary. The development of vocabulary befitting a formal register was also identified as having implications for expression beyond the walls of the classroom, in terms of being able to use or adapt to new registers, within such environments as work experience classes.

5.5.3 “Sophisticated” vocabulary: “the difference from achieved to merit to excellence”

Besides assisting students in conveying ideas, use of varied or sophisticated vocabulary was described as having additional merit. Kate (Fairview Boys' High) argued that repetition of the same word made writing uninteresting, and that this was particularly problematic in creative writing. She added that students who used more sophisticated words incorrectly still received encouraging feedback, in that it was better that they tried out this language than defaulted to more basic or repetitive vocabulary. This view is echoed by others, such as Jane (Hawthorne Girls' College) who commented that better use of vocabulary just "lifts their writing", and Lou (West Central Boys' College), who states that when marking "you're often suggesting words they might use, and

suggesting they might go back to the reference material, look for more interesting, sophisticated language". However, some teachers saw misuse of sophisticated vocabulary as potentially problematic, and as revealing a lack of knowledge with Meredith (Fairview Boys' High) emphasising that "it's the word that fits, not the most unusual word".

Teachers reported that the effects of vocabulary on writing as discussed in the previous section have implications for achievement in NCEA. Meredith (Fairview Boys' High) described vocabulary as "the difference from achieved to merit to excellence", while Bridget (Northgate Girls' High) emphasised that "the reality is if you want to impress a marker, gain those top grades, you generally use a bigger, more sophisticated, more complex vocabulary". Student awareness of the importance of vocabulary for success in NCEA was a recurrent theme, together with the view that students need to be motivated to increase and demonstrate the complexity of their vocabulary. However, the relationship between vocabulary and grades was not seen as entirely straightforward, and a rather more complex view is given in the next section.

5.5.4 Making good use of a smaller vocabulary

Two of the participant teachers emphasised that students can still get by with a smaller vocabulary, but in order to achieve higher marks they would need to compensate in other areas: this may mean having other skills related to the subject. For example, on students who do not use sophisticated vocabulary, Bridget (Northgate Girls' High) remarked that "you can write well basically, and you can get some of those grades, you can get achieved, and you can probably get merits and excellences as well as long as you understand and you develop your ideas". And Anne (Eastwood College) argued that the potential limits of a smaller vocabulary could be sidestepped if the student was skilful at using language effectively: "you can write a very good piece with very simple words, but then you have to have the syntax and know how to manipulate the syntax so that it's effective". Thus while these comments about the mileage students could get out a small vocabulary were not a prominent theme in the teacher data, they provide an interesting counterpoint to some of the broader claims that are made regarding the importance of vocabulary for achievement and the ability to engage with more complex written tasks.

5.6 Conclusion

The qualitative findings discussed in this section confirm the quantitative findings that the period between years 11 and 13 (age 15-18) constitutes a period of significant lexical development in secondary school. As well as experiencing general growth in their vocabulary, teachers also reported students showing increasing orientation towards and awareness of advanced vocabulary, and they display greater control of their vocabulary resources in their writing. Increasing curriculum demands were seen to promote learning and elicit use of advanced vocabulary, with cognitive developments enabling further acquisition to an extent. Individual differences such as students' inclination to read and experiences beyond the classroom were also identified by teachers as factors which affect students' vocabulary acquisition rates. Teachers did point out though that the picture was complex, with differences within year levels sometimes being as great or greater than between year levels. They also revealed the impact of diverse attitudes to having a larger vocabulary as in some cases being a marker of intelligence, and in others as being more stigmatised. Finally, teacher interviews allowed for a situated approach to understanding lexical development in secondary school settings, highlighting the difficulty experienced by students with less vocabulary in the following: accessing the curriculum and understanding reading texts; interpreting what was required in assessment questions; being able to convey ideas in any complexity or depth according to the requirements of the subject.

Chapter 6

Discussion

6.1 Introduction

Four major areas of discussion emerge from the quantitative and qualitative findings of this study of lexical development situated in New Zealand secondary schools. The first concerns the nature of lexical development within the period of later adolescence, then the contribution of cognitive development, followed by further consideration of the role played by the curriculum with a specific focus on reading texts and task requirements. Addressing the issue of individual variation in lexical development is the next strand of discussion, and considers variation in terms of reading and exposure to texts, and in both attitudes and orientation to vocabulary. The concluding section aims to draw together the discussion within and across the themes which have emerged from the study.

6.2 Lexical development in later adolescence

Predictions made in the research literature that lexical richness development is more likely to occur in the later years of adolescence (see sections 2.2, 2.3) have been confirmed by the findings in this study. The findings based on productive vocabulary use in authentic writing tasks have revealed that marked development occurs in the areas of lexical variation, sophistication and density between years 11 and 13. They also reveal that productive lexical usage does not show signs of development in any areas from years 9 to 11 except in terms of lower-frequency word use.

When aligned with literature on these lexical richness measures, the results can be interpreted further in terms of key areas of vocabulary development within the student population studied. With lexical variation and lexical sophistication linked to vocabulary size (Malvern et al., 2004; Nation & Webb, 2011), heightened scores in this area at year 13 can be seen as reflecting growth in vocabulary resources from year 11 onward. The dispersion data from this study lends further support to this finding. It is also important to note that unlike other areas of lexical richness examined here, development of lower-frequency word use was seen to occur between years 9 and

11. This suggests that students' vocabulary does indeed undergo growth across these years, with students increasingly incorporating lower-frequency words into their vocabulary at each stage of secondary school. However, in the early years of secondary school vocabulary growth does not extend to an increased diversification of students' vocabulary use in this study, nor to an increased incorporation of academic words in writing tasks. The evident spike in lexical sophistication and variation from year 11 onward further suggests that between the ages of 15 and 18 students may become more skilled and precise in conveying meaning through word use, in that lexical variation indicates a writer has a wider semantic field to draw from (Berman, 2007), and the use of lower-frequency words allows writers to express themselves more succinctly (Nation & Webb, 2011). In addition, the significant rise in lexical density levels from year 11 to 13 suggests that students become increasingly adept at conveying information in a more concise manner through efficient word use. It is also possible that students are aware of the expectation outlined by Townsend et al. (2012) that academic writing should be expressed succinctly and should minimise wordiness. One implication beyond this is that students are developing a writing style which allows them to reduce their word use without omitting information.

Importantly, the quantitative findings from this study show that from year 11 onward students' word use aligns significantly more with that of academic written register norms than at earlier levels. It was from this stage that students were employing a greater range of words in their writing, including greater levels of lower-frequency and academic words, and featuring a higher proportion of content words indicating economic word use. These aspects of the year 13 written essays reflect features of word use typical of adult written register conventions and academic written registers (Halliday, 1979; Biber, 1999, 2006, 2009). In short, the findings reveal remarkable gains in awareness of and conformity to academic register norms during a relatively short period of time. Two key areas were identified in teacher interviews as contributing to this development: cognitive developments, and increased curriculum demands. These two factors are discussed in turn below.

6.3 The contribution of cognitive development

During the interviews, teachers made reference to the evident cognitive developments that take place during adolescence; they saw such developments as both enabling and resulting in the acquisition of more advanced vocabulary and higher-register language. Teachers constructed the

cognitive development of students' orientation at year 9 as still being relatively child-like, compared to year 11 onward when students are more open to and engaged with the complexity of the world and are able to appraise things in more abstract terms. These processes noted by teachers demonstrate how the development of abstract thought, identified as one of the key cognitive developments affecting vocabulary acquisition during adolescence (Storck & Looft, 1973; Nippold, 2007), is evident as students progress through secondary school. The results also provided real-life exemplification of Nippold's assertion that the development of abstract thinking is necessary before students can understand polysemous terms such as the distinction between *church* as a physical place and *church* as an institution. Seen in the light of Biber's (2006) finding that abstraction is prevalent in the advanced lexicon, these teacher observations suggest that in the early years of secondary school, many students may not be cognitively ready to acquire the advanced vocabulary employed by the year 13 writers.

The study revealed a second area of cognitive development relating to vocabulary development, that of increased metalinguistic awareness, which was seen as guiding and facilitating lexical growth. And alongside that awareness was an increasing orientation towards vocabulary on the part of students as they progressed through secondary school, and particularly evident in the senior years. Teachers referred to students becoming more conscious of their own vocabulary use, more aware of semantic distinctions between words close in meaning (such as *show* vs. *portray*), and more willing to try out new vocabulary. This observation serves as further evidence that students develop greater metalinguistic awareness during adolescence, with individuals developing the ability to look at language as a decontextualised object (Owens, 2008). Development of metalinguistic awareness is also evident in the finding that at year 13 students increasingly aligned features of their vocabulary use with that of written register norms. Thus the findings from this study lend support to Halliday's (1979) assertion that the secondary years are a time when students develop increasing awareness of differences in register, and beyond this, a time when they come to possess the metalinguistic competence to adapt their language accordingly.

6.4 The contribution of the school curriculum

The spike in lexical richness rates from year 11 onward evidenced by the results of the current study corresponded to a period in secondary school marked by increased curriculum demands, with the teacher participants arguing that those increased curriculum demands are important factors influencing vocabulary development. In this discussion increased curriculum demands are considered from two interrelated perspectives: firstly in terms of requirements to engage with increasingly advanced reading texts, and secondly requirements to complete more complex written tasks identified in NCEA frameworks.

6.4.1 Reading texts

Teacher reports in this study saw lexical development as related to exposure to more complex vocabulary evident from year 11 when the level of texts studied increased in difficulty according to curriculum requirements. Importantly, teachers saw a substantial component of essay writing during secondary years as the ability to communicate ideas, and that vocabulary was central to that in terms of appropriate word choice. And it was reading that was seen as providing models to students of how words are used by expert writers.

In this study too teachers argued that it was through reading that students developed a degree of facility in word choice and conveying ideas. Exposure to reading texts was seen as critical in building a wide repertoire of vocabulary which can then be drawn on to build students' own ideas in their own writing. This teacher-based observation corresponds with Coxhead, Stevens and Tinkle's (2010) New Zealand-based research which shows that secondary school science textbooks featured increasing levels of low-frequency words as the year level of the intended audience grew. Furthermore, lexical density has been consistently identified as a feature of secondary school textbooks (Ravid & Zilberbuch, 2003; Fang, Schleppegrell & Cox, 2006). Thus, in the secondary school context students are presented with models of academic register norms at increasingly advanced levels through their reading requirements. When aligned with empirical evidence showing that a substantial amount of vocabulary can be acquired through exposure during reading (Cunningham & Stanovich, 1991; Stanovich & Cunningham, 1992), it is highly plausible that the spike in word use observed in this study from year 11 onward can be partially accounted for by

exposure to more advanced texts in accordance with the New Zealand curriculum. Seen in another way, students' vocabulary resources expand in order to keep up with increasing curriculum demands in relation to increasingly complex texts. Thus the study also suggests that the strong links established through empirical studies between reading and vocabulary levels in childhood may also extend into and be witnessed across the period of adolescence.

6.4.2 Task requirements

With reference to the second dimension of curriculum demands, the study also suggests that heightened task requirements also come into focus as eliciting more advanced vocabulary use in the secondary school context. Interview data revealed that there are relatively specific criteria for vocabulary use in writing during the NCEA years - including a wider range of vocabulary, and higher-register vocabulary - compared to the junior years of secondary school. That students are pushed to use vocabulary in a more advanced way, particularly from year 11 onward, can be seen as meeting a requirement to convey what Bar-Ilan and Berman (2007, p. 26) term "literate linguistic expression". This observation is mirrored by arguments that expository text production fosters the development of advanced language through its higher register requirements (Berman & Nir-Sagiv, 2007; Wolsey, 2010). Further supporting this suggestion are the descriptions from teachers in this study of the impact vocabulary use has on the perceived writing quality of a text, and correspondingly, its assigned mark.

Clearly, vocabulary development is a high stakes process for students concerned about their academic achievement which may also foster further acquisition. A look at the directive language of task requirements at years 11, 12 and 13 demonstrates the developing complexity described by the teachers. At year 11, students are required to "explain"; at year 12 they must "analyse"; and at year 13 they are asked to "respond critically" (Te Kete Ipurangi, 2013). Evidently, as task requirements become more advanced, greater vocabulary resources are required to articulate more complex ideas. In this way, teachers revealed that when students are presented with more sophisticated concepts, they need a particular level of vocabulary in order to successfully develop what Rachel (Northgate Girls' High) called "those insightful comments". When it came to

conveying subtle ideas in particular, having a rich repertoire with which to exploit different connotations of words with similar meanings was seen as essential. Thus, the rise in complexity of task requirements during NCEA which corresponds to a jump in vocabulary use could be interpreted as an indication of students employing the requisite vocabulary to successfully convey more advanced levels of thinking.

Finally, findings from this study revealed that teachers explicitly direct students' attention to the impact and significance of word choice, particularly in the later years of secondary school. However, individual variation also came into play as an evident dimension influencing lexical development, and this is now discussed.

6.5 Individual variation

Both the quantitative dispersion data and the qualitative teacher observations in this study pointed to variation in lexical richness levels among students of the same year level. While this was not a major focus in the original interview design (see appendix 9 for interview questions), it emerged as a theme in the interview data including observations that variation within year levels or even classes seemed as marked as that across year levels. Diversity within populations has not been explored in any depth in adolescent lexical richness studies, and the current study identifies this as a significant element warranting further attention. While it is important to identify factors affecting all participants, such as cognitive developments and curriculum demands mentioned in the previous section, an equally important dimension in this enquiry concerns how development occurs on an individual level. Two key factors influencing individual variation emerged within this study: reading mileage, and what can be termed attitude and orientation to vocabulary learning. Each of these is discussed below.

6.5.1 Individual variation in reading and exposure to texts

The qualitative findings of this study strongly support Nippold's (2007, p. 25) proposal that "the process of word learning itself is enhanced through independent reading and by immersion in literate environments". In line with longitudinal findings that free reading is linked to vocabulary levels in children (Cunningham & Keith, 1991; Cunningham & Stanovich, 1991; Stanovich &

Cunningham, 1992), this study found that teachers saw students' inclination to read and reading experience as having a strong impact on their vocabulary knowledge. Interview findings further revealed teachers' concerns that at the later years of secondary school it was very difficult to make up for earlier more limited reading experiences in terms of both hours of reading and exposure to a range of texts. And the effects spilled over to writing: teachers expressed concerns that students were unable to begin challenging writing tasks based on texts they struggled to engage with because the vocabulary demands were beyond students' individual resources. Importantly too teachers reported that it was not just a case of struggling with the complexity of vocabulary in texts, but also with the complexities of vocabulary relating to assessments. In some cases students struggled with the metalinguistic demands of the vocabulary of assessment questions as in the difference between *explain*, *reflect on* and *analyse*, and had little idea what they were being asked to do. These findings align with empirical studies showing links between vocabulary size and educational performance (Pedrini & Pedrini, 1975; Turner & Williams, 2007), and, for the subject of English, teachers saw exposure to written texts and reading mileage as key factors underlying this connection.

6.5.2 Attitude and orientation to lexical development

This study has revealed a further element affecting vocabulary development at the adolescent level: teacher interviews highlighted the extent to which students' attitude and orientation to vocabulary learning influenced their productive vocabulary use. An interest in vocabulary and a desire to acquire an extended lexicon were seen as underpinning more advanced proficiency in relation to vocabulary. In some cases students' awareness of vocabulary as a marker of academic ability encouraged them to develop and demonstrate their ability, according to teacher participants. At the same time, it was also reported that for students who saw some social stigma in using advanced vocabulary, the opposite effect was observed. This reveals a further dimension of the significance of vocabulary for educational achievement, with teachers observing that in cases where students do not place high value on extending their repertoires, any classroom efforts directed at enhancing vocabulary often remain superficial. Furthermore, the findings point to the fact that having more limited vocabulary resources meant that those students were in general less inclined to engage with

the texts studied in class, and were more likely to be put off a text just by the presence of more advanced vocabulary. These avoidance practices in turn impacted further on their development. The study reveals that teachers were acutely aware of this phenomenon and felt relatively helpless to intervene. These perspectives add a real-life dimension to the cyclic issue outlined by Townsend et al. (2012) that those with greater vocabulary resources are more likely to understand texts and will therefore be better equipped to derive meaning of unknown words, suggesting that with greater resources comes a willingness and confidence to deal with new vocabulary.

6.6 Conclusion

From this study it is evident that while lexical development is a feature of adolescence, it is within the later period that marked growth in lexical resources takes place. We have a picture of lexical development in the earlier period as occurring in lower frequency word use. Further, we have observed that it is from year 11 onwards that students' word use aligns more with written register norms, which in this study has been linked to both cognitive developments and the increasingly complex requirements of the curriculum. Those curriculum demands were characterised across two broad, interrelated domains: the introduction of more demanding reading texts, and the increasingly difficult tasks that students are required to complete, including expository essays. Both the reading texts and writing tasks required students to possess not only advanced vocabulary, but also a degree of metalinguistic awareness together with a willingness to engage with challenging written assignments; the view that has emerged from this study is that vocabulary is central to being able to engage with the cognitive demands at that level and literacy activities in that environment. The view also emerged that teachers were concerned about how to help students who did not possess or struggled to develop the requisite vocabulary, given the rate at which those demands continued to increase. And a significant dimension that emerged through the study was that individual attitudes and orientation to vocabulary varied, as did out of class experiences; both were seen as impacting on what students brought to the new demands of vocabulary development in the senior years of secondary school.

Chapter 7

Conclusion

7.1 Introduction

To conclude I briefly review the focus and contribution of the study including a synthesis of the main findings. I then present implications in terms of theory and methodology, together with classroom-based applications. Limitations of the study are acknowledged, then future research directions arising from this work. The concluding section revisits the significance of the study and ends by bringing together researcher and teacher voices on lexical development.

7.2 Focus and contribution of the study

Using lexical richness as the point of departure, this study has investigated Berman and Nir's (2010) claim that adolescence is a developmental watershed for L1 lexical acquisition. It contributes to a significant body of research into the vocabularies of New Zealand adolescents, including the testing of the receptive vocabulary sizes of New Zealand secondary school students (Coxhead, Nation & Larsen, under review), and investigation into the receptive vocabulary size required to comprehend secondary school texts (Coxhead, Stevens & Tinkle, 2010; Coxhead & White, 2012; Coxhead, under review).

The current study has also contributed to a growing body of research into L1 productive vocabulary development from late childhood to early adulthood reviewed in Chapter 2. Application of a lexical richness approach to L1 lexical development has enabled researchers to employ newly-developed computational tools to automatically and reliably analyse large bodies of cross-sectional data according to different aspects of lexical development. While earlier studies of productive lexical development have collectively revealed that adolescence is a period of heightened lexical development, what had remained un-examined is the nature of this development occurring *within*

the period of adolescence. Key questions which had not yet been addressed included: Is there a period of heightened development within the period of adolescence? How is development in the secondary school seen through analysis of authentic written essays, as opposed to texts produced under experimental conditions? And extending this situated approach, what can we learn about the nature of adolescent lexical development during secondary school years from talking with teachers? It was questions such as these which were broadly encapsulated in the following two research questions this study has answered: What do cross-sectional analyses of secondary school writing reveal about adolescent lexical development during the secondary school years? What are New Zealand English teachers' perspectives on adolescent lexical development during the secondary school years?

In terms of the first question, findings from the cross-sectional analysis revealed that there was a clear period during adolescence in which the “developmental leap” was apparent: 15-18 years of age, or late adolescence. Additionally, productive knowledge of low-frequency words was seen to develop earlier than the other areas of productive ability studied. This finding showed that there was indeed evidence of productive lexical development occurring during early adolescence in this study, but this development was not as multi-faceted or prominent as the development occurring in later adolescence. In terms of the second research question, the study has highlighted the importance of key adolescent cognitive developments, such as increased metalinguistic awareness and abstract thought, in providing the conditions for such heightened lexical development as observed in this study. Influences related to the school curriculum by way of increased reading load involving more complex texts and increasingly challenging task demands were also seen to have a significant impact on rates of vocabulary development. Importantly, findings also showed that cognitive and educational factors are not definitive in influencing acquisition, with mediating factors which vary individual to individual – such as inclination to read and orientation towards and interest in new vocabulary – playing a decisive role in lexical development during the secondary school years.

7.3 Theoretical implications

This study supports findings that significant and advanced lexical development occurs during adolescence (Stromqvist et al., 2002; Ravid, 2006; Bar-Ilan & Berman, 2007; Berman & Nir, 2010). A further and important contribution of this study has been the identification of a period within adolescence where a significant amount of this development may occur: the period 15-18 years. This finding not only adds to our understanding of the developmental trajectories towards adulthood, but also raises important questions with regard to factors underlying this developmental spike. The present study has revealed increased demands in the school curriculum as coinciding with heightened lexical development. More specific factors relating to educational environment, such as a more challenging reading load, greater task complexity, and higher expectations with regard to quality of written output, were identified as impacting on vocabulary uptake, particularly during the latter years of secondary school. This observation lends weight to Bar-Ilan and Berman's (2007) theory that more advanced forms of language are acquired during secondary school as students are required (for the first time) to produce well-formed expository texts. Findings further suggest that Nagy, Herman and Anderson's (1985, p. 233) observation that "incidental learning from context accounts for a substantial proportion of the vocabulary growth that occurs during the school years" may be as relevant to the secondary school context as to the primary school context this quotation was referring to. However, more research is required to advance our understanding of this connection at the secondary school level.

A further contribution from this study has been the finding that lower frequency word use undergoes significant development before other areas of lexical richness examined in this study. This raises implications for our understanding of how later-acquired vocabulary develops. Is it that academic word use, lexical variation and lexical density are more advanced aspects of vocabulary use, for which development is delayed? Or, are teenagers exposed to higher levels of low frequency words before they are exposed to these other areas of vocabulary and vocabulary use?

7.4 Methodological implications

A secondary goal of this study was to bring to light some methodological considerations regarding approaches to later language acquisition. This section briefly discusses two key considerations. Firstly, as outlined earlier, the bulk of studies focussing on adolescent lexical development – particularly those which have been conducted over the past 10 years and which take the lexical richness approach – have looked at development quantitatively through changes in vocabulary size or use. While the contributions of such quantitative studies are indisputable, without looking at the contexts in which such development may occur and identifying factors which are likely to contribute to development any conclusions of such a nature remain speculative. Some may argue that understanding factors underlying development is of ancillary importance to understanding the patterns of development itself, but without the identification of causes behind development we are left with little to offer educators, policy makers, parents, and other interested parties.

A second methodological matter which has been raised in this thesis is the benefit of analysing authentic written texts as an alternative to texts produced under experimental conditions. While there are evident drawbacks to the collection of authentic texts – namely that researchers cannot control for writing time and subject matter – there are important reasons for analysing authentic texts, worth considering. Significantly, when looking at texts produced by students for school, which will be graded by a teacher and which will focus on a topic studied over a period of weeks, we are more likely to be examining language produced by students in which they are required to display their full potential. Thus the analysis of authentic texts in this study has allowed us to more accurately gauge the extent of their productive knowledge, and accordingly, assess the gaps between different sets of students' abilities.

7.5 Practical implications

It is important to emphasise that the practical implications drawn from the study are put forward somewhat tentatively, given that the study did not set out to derive suggestions for classroom application. However, as the thesis has identified the salience of lexical development as a major facet of secondary school attainments, it is useful to propose some implications for practice. The first of these is that vocabulary should be given a more central focus in the curriculum, starting

ideally before secondary school so that lexical development and awareness of vocabulary begin early and with time to develop. This would be at a time when curricular content remains relatively accessible, and when habits can be laid down. Alongside a focus on vocabulary, the importance of reading cannot be over-emphasised, both within and outside school. In terms of students' attitude and orientation to vocabulary, it may be difficult for teachers or schools to directly address negative attitudes towards more advanced vocabulary, but this research suggests that more attention could be given to being aware of and counteracting those perceptions where possible. As an example, one school in the study had a "word of the week" approach throughout the school year, which was a focus of assembly and other activities across the school. And finally, drawing on my own story given at the beginning of the thesis, I would suggest the value of teachers' recognising the demands inherent in the developing literate lexicon, and of supporting and reassuring students as they encounter and face up to what is an exacting but ultimately rewarding challenge.

7.6 Limitations

When considering the quantitative findings of this study it is important to bear in mind that only data from decile 9 and 10 schools were analysed, the students of which typically come from a relatively high socioeconomic band. This limitation means that results cannot be generalised to represent the wider New Zealand population. Empirical findings suggest that socioeconomic background significantly impacts on an individual's vocabulary development trajectory (Corson, 1985) and as such, results from a study focusing on lower socioeconomic student populations may produce somewhat different results in terms of adolescent lexical development.

A further limitation of this study to bear in mind is that the focus of the study was somewhat constrained in that it looked only at English classes. It cannot be assumed that the quantitative trends observed in this study in terms of year level-related lexical richness development would also be observed when looking at other subjects; likewise, teachers from other subject areas may view vocabulary development during the secondary school years differently. Particularly given that a major focus of this study has been on the development of features relating to written register norms, and that essay features are found to vary subject to subject (Crowley, 1986; Beck & Jeffery, 2009), more research is needed to verify if the findings from this study can be generalised to

development across secondary school as a whole.

7.7 Future research

Several future research avenues arise from the findings of this investigation. The first is a comparison of findings from this lexical richness study with data from the New Zealand secondary school corpus, once it is completed (see Coxhead & White, 2012 for further details). As the corpus will comprise a representative sample of texts students are required to read across school subjects and year levels, it will be possible to investigate potential links between increasing complexity in texts for reading, and the increase in lexical richness in written outputs, particularly from year 11 onward. This research could contribute to our understanding of whether literacy has a direct influence on vocabulary development, as argued by Stanovich and Cunningham (1992), or whether it has a less prominent, mediating role, as suggested by Olson and Astington (1990). This research could also reveal whether frequency of exposure directly influences incorporation into the productive lexicon, or whether other factors influence this uptake (such as morphological complexity and semantic abstractness, as suggested by Nippold (2006), or broader factors relating to the typology of English (Berman, 2004), such as wide versus narrow choice of synonyms).

Additionally, it would be worthwhile to compare findings from the current study with performance of other populations. As mentioned in the previous section 7.6, there is a need to conduct research of this nature among more diverse socio-economic populations in order to better understand the developmental trajectories of the wider New Zealand population, as well as factors underlying this development. A comparison of the lexical richness features in the writing of participants in the current study to that of L2 international students, migrants and refugees could provide valuable insights for teachers, materials designers and curriculum planners in terms of helping students to align their written production with the standard target language output.

7.8 Concluding remarks

This study represents a response to claims that the secondary school years are an important period for lexical acquisition. Beyond confirming this observation, the present study has shed light on developmental trajectories within this period, with the key finding that the bulk of lexical richness development occurs in the later adolescent years. Furthermore, it has underlined the importance of factors which impact on development during this key period, such as cognitive development, school curricular requirements and students' attitudes and academic orientations towards vocabulary. In presenting these findings I hope the research will lead to an appreciation of the importance of later lexical acquisition. This is the language which adolescents will need in their transition to adulthood, and which will serve them throughout their adult years. Indeed, without having experienced the period of struggle in learning to produce academic written texts, as outlined in the introduction, I would never have acquired the vocabulary required to write the present thesis. And the importance of this vocabulary is first made evident to students at secondary school. The significance of vocabulary in educational settings and beyond is perhaps best summarised by the argument that later attainments "contribute substantially to academic and vocational success" (Nippold, 2006, p.3) and by Rachel (Northgate Girls' High), a teacher who emphasized that for students "vocabulary's fundamental to everything they do".

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Appendices

1. Ethics approval



Phone 0-4-463 5676
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Email Allison.kirkman@vuw.ac.nz

MEMORANDUM

TO	Rebecca White
COPY TO	Averil Coxhead
FROM	Dr Allison Kirkman, Convener, Human Ethics Committee
DATE	11 April 2013
PAGES	1
SUBJECT	Ethics Approval: 19715 Lexical richness in adolescent writing: investigating productive vocabulary in New Zealand secondary schools

Thank you for your application for ethical approval, which has now been considered by the Standing Committee of the Human Ethics Committee.

Your application has been approved from the above date and this approval continues until 20 February 2014. If your data collection is not completed by this date you should apply to the Human Ethics Committee for an extension to this approval.

Best wishes with the research.

Allison Kirkman
Human Ethics Committee

2. Information sheet - students



Information sheet for students

Features of Writing in Secondary Schools

Researcher

Rebecca White, School of Linguistics and Applied Language Studies

Victoria University of Wellington

Dear students, parents, guardians, and caregivers,

I am a Masters student in Applied Linguistics at Victoria University of Wellington. I am currently undertaking a research study as part of my thesis, looking at features of writing development during the period of adolescence.

About the project

This study is designed to find out more about the nature of language development during adolescence, by analysing the writing of secondary school English essays. I will be collecting essays written by students for English class at years 9, 11 and 13. I will look at what features of writing can be seen at each of the year levels, and how these features change across the year level groups.

Participants

I am inviting New Zealand secondary school students who belong to year 9, 11 or 13 to participate in this study. If you would like to participate in this study, you will be asked to send me a copy of an essay completed during this school year (2013) for English classwork via email, or a hard copy if this is not possible. You will also need to complete a demographics form, outlining some basic

personal details about yourself, and a consent form, which ensures you have read this information sheet, and gives your consent to participate in this study. All students who send in an essay will go in the draw to win an apple iPod.

Parental permission

Participants under the age of 16 will also need a parent, guardian or caregiver to sign the consent form, to show that they have parental permission. Participants aged 16 and over do not need parental permission.

Confidentiality

While participants will be required to give their name in order to enter the draw to win an iPod, the essays and demographics forms will remain anonymous throughout the study. They will be analysed and the results will be put into a report on an anonymous basis. It will not be possible for you to be personally identified - only grouped findings will be presented. The results from this study will have no bearing whatsoever on your school results. All material collected will remain confidential. No other person besides me and my supervisor, Dr Averil Coxhead, will have access to this data, and after the study is completed all data will be destroyed.

Withdrawing from the study

If at any time you would like to withdraw from the study, just contact me or my supervisor Dr Averil Coxhead (details below) and I will take your data out of the study. If this becomes the case, please do so before 14 October 2013.

Results

If you would like to know the results of the study, you can check the box on the consent form and fill in your email address and I will email you the results once the study is completed.

This study has been approved by the Human Ethics Committee at Victoria University of Wellington. If you have any questions about the project, you can contact me or my supervisor using the following contact details:

Rebecca White	Dr. Averil Coxhead
School of Linguistics and Applied Language Studies Victoria University of Wellington PO Box 600 Wellington 6140	School of Linguistics and Applied Language Studies Victoria University of Wellington PO Box 600 Wellington 6140
Phone: (04) 463 5233 ex. 8703	Phone: (04) 463 5625
Email: Rebecca.white@vuw.ac.nz	Email: averil.coxhead@vuw.ac.nz

Thank you for reading this information sheet.

Rebecca White

3. Consent form - students



Consent form for students

Features of Writing in Secondary Schools

Researcher

Rebecca White, School of Linguistics and Applied Language Studies

Victoria University of Wellington

The project

This project looks at how writing develops during adolescence. To do this I will look at what features of writing are used in New Zealand secondary school English essays. These features will be compared across three year groups: year 9, year 11, and year 13. Your participation in this study means you will send in a copy of an essay written for English class, and complete a demographics form.

Who needs to sign the form?

If you are over sixteen (16) years old, you can sign the form yourself. If you are under sixteen years old, your parent, guardian, or caregiver, needs to sign the consent form.

What should you do if you want to withdraw?

Contact Rebecca White (rebecca.white@vuw.ac.nz) before 14 October 2013 if you wish to withdraw.

This study has been approved by the Human Ethics Committee at Victoria University of Wellington. All material collected will remain confidential, and after the study is completed all data will be destroyed.

By signing this form you agree to the points outlined here and in the information sheet. Please don't hesitate to ask if you have any questions. There is more information on the study in the information sheet, so please ensure that you read it.

I agree to participate in the research study described above. I have read the information sheet.

Name of the participant:

Name of parent, guardian, caregiver (if the participant is under 16 years old):

Signature:

Do you want to know the results of the study?

If you would like to know the results of the study, just tick the box below and enter your email address and I will send you a summary once the study is completed.

☐ I would like to receive the results of this study.

Email address: _____

4. Sample Year 9 essay (500-word extract)

The novel that I have been studying is named the seawreck stranger. This novel has been written by anna Mackenzie. The main plot of this interesting novel is a young teenage girl by the name of ness. She lives on dunnet island. Her parents are no longer with her so therefore she is living on her uncle marn's farm. She finds dew along on the seashore and begins to help him recover and this means she is rebelling against her own harsh society. The three important qualities that I admired about ness is how determined she was of saving the strangers life, her bravery when she risked her life for the young goat in the storm and finally her resourcefulness to save dev's life. The following quality is determination.

Firstly, I admired ness's determination greatly. Ness showed her determination when she took in dev and helped him to recover fully, when he was close to dying. Even though ness did not know him she showed determination to help the stranger to live under harsh laws and a very ruling society. I admired ness's determination when she broke the laws that colm Brewster and set to do the right thing she is only a teenager and is rebelling against the laws of the ruling society. This shows a lot of determination and I admire what she had done to risk her own life for dev to live. I thought that ness's determination showed a lot of tolerance. This was a major theme in this novel. I admired ness's determination when she risked her own life for someone she didn't even know. I learnt something very important in this study. The thing I learnt was to be able to care for all humans no matter who they are, what they look like or if they are a stranger or not. You will go a long way in life and this trait takes a lot of determination. I could never think in a million years of doing such a thing but what I know everyone would love to have that much determination in them to save some stranger's life. The author wrote this novel because she was wandering along the beach and she came upon something unexpected. She had found an object that was unexpected and dev relates to this the author was also very determined to stop all the pollution and the dumping of waste on the coast of France. This is another example of what she linked into the novel. Kate Sheppard was a young determined lady just like ness. She was very determined for all of the woman in new Zealand to be eligible to vote and have equal rights. I admire her she is a real life example to link to this novel in some different ways of course.

5. Sample Year11 essay (500-word extract)

In the film Juno directed by Jason Reitman. A character who I thought changed was Vanessa. Juno is about a 16-year old girl who finds out she's pregnant. At first she wants to abort the baby, but is then persuaded by a protesting school student to keep the baby and adopt it out. She undergoes enormous amounts of stress which require her to get out of her comfort zone-and grow up: She has to deal with problems made for someone much older than she is. Reitman showed change in Vanessa through costume, action and colour. AU three of these techniques showcase the change in Vanessa effectively and shows the audience the loving mother she blossoms into.

Vanessa comes across as high maintenance and we get a shallow impression of her from her costume. Where we first meet her we are not greeted by her face, we are shown her hands in a close up re-arranging photo frames to a perfect sit, adjusting flowers and fragrance sticks evenly and making sure her clothes are in mint condition. It seems to be a must for Vanessa to be perfect, and-we know-she is desperate to impress Juno. Her costume shows this with a dark-navy sweater vest and a white button up blouse (representing business, power and maturity). She also wears polished pearls and gold cuff links to accessorise her outfit to Make her shine, representing a strong sophisticated and "American dream" look. As the film progresses we notice a slight change in Vanessa's costume when Juno sees her at the mall with her friends. She's wearing a fluffy fin-jacket hood, with a soft merino type sweater underneath. Contrasting from the first time we meet Vanessa she has a completely different appeal to her. She looks happier, more comfortable and very calm and collective in her own skin. This shows that she is in her element, just relaxing, spending time with her friends, and playing with the children. She's not worried about getting her clothing dirty or making herself the American dream business woman. She's just being her, and judging by her costume, she dresses just like a mum would. Towards the end of the film we see Vanessa in a two person shot holding her baby boy looking at him (Madonna and child shot). We see she is dressed in a soft woollen knitted jumper with a light blue blanket spread over her shoulder and-her baby is wrapped up in a mink blanket, all snug and warm. This shows how comfortable and natural Vanessa is at being a mother. This baby has brought Vanessa both hope and happiness and has completed her life dream of being a mother. Vanessa's change in costume throughout the movie has really helped me to understand that first impressions aren't always a true

statement of a person. Reitman has shown a brilliant contrast of costume through Vanessa's character and has displayed great effect to it. The change in Vanessa's costumes has also shown her true self and has brought out her personality as a genuine, caring, loving mother in the making and we grow to like her more and more as the movie comes to an end.

6. Sample Year 13 essay (500-word extract)

In the film *Atonement* directed by Joe Wright, complex and time-shifting narrative structure is a significant feature of this film. Like the earlier novel, written by Ian McEwan, *Atonement* has four distinctly different parts, each given its own colour palette and filmed with its own appropriate camera technique. First the crime, set on a summer's day in 1935. Then the consequence and pence both in which are set in overlapping times in 1940 during the war, first France and then in London. Lastly, the judgment occurs in the coda, which is set in 1999 in a London television studio. However, within each of these parts is a much more complex treatment of time; a narrative structure that underlines the film's important themes of differing perspectives on events, and the damaging and redeeming effects of story telling.

The first third of the film is about the events of a single day in 1935. Briony, the 'eye's of the film, observes a sexually charged confrontation between her older sister Cecilia and Robbie. To demonstrate the huge discrepancy between what 13-year-old Briony imagines happens and what Briony, the adult writer imagines really happens between Robbie and Cecilia the scene is shown twice. The narrative, therefore, cuts back in time and 'replays' the event in more detail. The same narrative shift is utilized again, when Briony interrupts a love scene between Cecilia and Robbie in the library. These shifts in narrative perspective become significant in the implications of the lie she tells, ... "I saw him. I saw him with my own eyes". When Briony was giving evidence against Robbie, there was a typewriter sound in the background; signifying this was another of her stories, it was made up. Not the truth. It was a character defining moment for Briony, she seems to be the onlooker, the observer of others live, but turns out to be the architect, the writer and controlling mind.

That narrative time shifts in Part two of the films are for more conventional purposes. A jump cut takes us to 1940, Dunkirk/France. This abrupt shift in time and place is intended to dramatize the abrupt change in Robbie's circumstances. A changed colour palette illustrates this abrupt shift in time. Flash back scenes, from Robbie's point of view, fill in gaps in Robbie and Cecilia's story (Swallow Tea Shop, Cecilia posting Robbie a letter he has already received). Both these flashbacks from Robbie's point of view demonstrate the power and memory and imagination to comfort and sustain in times of suffering. This third flashback is triggered by the sight of dead schoolgirls,

reminding Robbie of a 10-year-old Briony throwing herself in the river for him to save her. Here, Robbie is trying to make sense of why Briony had lied.

The most interesting departure from simple chronological structure in this part of the film is the montage that ends it. This montage of moments from Robbie's past has many of the events running backwards – reinforced the idea that it is possible to 'rewrite' our lives, to start again on a clean page, to undo the damage so that the story can resume.

7. Information sheet - teachers



Information sheet for teachers

Features of Writing in Secondary Schools

Researcher

Rebecca White, School of Linguistics and Applied Language Studies

Victoria University of Wellington

Dear teachers, principals, Heads of Department,

I am a Masters student in Applied Linguistics at Victoria University of Wellington. I am currently undertaking a research study as part of my thesis, looking at vocabulary richness and development during the period of adolescence.

About the project

This study is designed to find out more about the nature of writing development during adolescence, by analysing the vocabulary used in secondary school English essays. I will be collecting essays written by students for English class at years 9, 11 and 13. I will look at what features of vocabulary can be seen at each of the year levels, and how these features change across the year level groups.

Participants

I am inviting English classes at years 9, 11 and 13 to participate in this study. If your class would like to participate, I will ask for a copy of an essay from all students who want to participate. Students will also need to complete a demographics form and a consent form. In exchange, you

will be given a summary of the lexical richness features of the vocabulary of your students, and suggestions for how this information may be used for vocabulary building in the classroom.

Confidentiality

All information collected will be put into a report on an anonymous basis. It will not be possible for any participant to be personally identified - only grouped findings will be presented. All material collected will remain confidential. No other person besides me and my supervisor, Dr Averil Coxhead, will have access to this data, after the study is completed all data will be destroyed.

Withdrawing from the study

If at any time you would like to withdraw from the study, just contact me or my supervisor Dr Averil Coxhead (details below) and I will take your data out of the study. If this becomes the case, please do so before 14 October 2013.

Results

If you would like to know the results of the study, you can check the box on the consent form and fill in your email address and I will email you the results once the study is completed.

This study has been approved by the Human Ethics Committee at Victoria University of Wellington. If you have any questions about the project, you can contact me or my supervisor using the following contact details:

Rebecca White	Dr. Averil Coxhead
School of Linguistics and Applied Language Studies	School of Linguistics and Applied Language Studies
Victoria University of Wellington	Victoria University of Wellington
PO Box 600	PO Box 600
Wellington 6140	Wellington 6140

Phone: (04) 463 5233 ex. 8703	Phone: (04) 463 5625
Email: Rebecca.white@vuw.ac.nz	Email: averil.coxhead@vuw.ac.nz

Thank you for reading this information sheet.

Rebecca White

8. Consent form - teachers



Consent form for teachers

Features of Writing in Secondary Schools

Researcher

Rebecca White, School of Linguistics and Applied Language Studies

Victoria University of Wellington

The project

This project looks at how writing develops during adolescence. To do this I will look at what words are used in New Zealand secondary school English essays. The vocabulary of the essays will be compared across three year groups: year 9, year 11, and year 13. Your participation in this study means you will take part in an interview on the subject of vocabulary use in your students' English essays.

What should you do if you want to withdraw?

Contact Rebecca White (rebecca.white@vuw.ac.nz) before 14 October 2013 if you wish to withdraw.

This study has been approved by the Human Ethics Committee at Victoria University of Wellington. All material collected will remain confidential, and after the study is completed all data will be destroyed.

By signing this form you agree to the points outlined here and in the information sheet. Please don't hesitate to ask if you have any questions. There is more information on the study in the information sheet, so please ensure that you read it.

I agree to participate in the research study described above. I have read the information sheet.

Name of the participant:

Signature:

Do you want to know the results of the study?

If you would like to know the results of the study, just tick the box below and enter your email address and I will send you a summary once the study is completed.

☐ I would like to receive the results of this study.

Email address: _____

9. Interview questions

Questions for teacher interviews

1. How long have you been teaching English for?
2. This study is looking at the vocabulary used in student writing. Do you or does the department have an approach for dealing with vocabulary?
3. In your opinion, how does vocabulary use affect students' writing?
4. Do you think vocabulary use affects achievement?
5. From your experience as a teacher, what do you believe to be some reasons behind differences in vocabulary use (i.e. more advanced/less advanced) among students?
6. What judgements/observations could you make about *your* students' vocabulary?
7. How well do you think the students in your class use vocabulary to express their ideas in their essays?
 - Compared to previous years?
 - Compared to other year levels?
8. Do you teach more than one year level? (If yes) What changes do you notice in the vocabulary used in essays across the different year levels?
9. In your opinion, what reasons might there be behind these *year level-related* changes to vocabulary use?
10. Do you have any other questions or comments about topics or issues related to the study?

10. Student Demographic Form



Demographics Form

Features of Writing in Secondary Schools

Please do not write your name on this sheet. It will be stored separately from the essay collected from you for this study and will not be linked with your essay in any way. This information will allow me to accurately describe the participants of this study.

For each item, please select **one** response or fill in the blank as appropriate.

Gender: female ☐ male ☐

Age: _____

Ethnicity (please choose one that best describes you) :

European/Pakeha ☐

Māori ☐

Asian ☐

Pacific Islander ☐

Other (please specify): _____

English is my first language: yes ☐ no ☐

I have lived in New Zealand (and/or another English speaking country) for _____ years.

