Language training to foster oral vocabulary development:

A randomized trial with Spanish-speaking children

Entrenamiento oral para fomentar el desarrollo del vocabulario:
un experimento aleatorizado con niños hispano-hablantes

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“If you really want something you have to be prepared to work very hard, take advantage of opportunity, and above all never give up.” (Jane Goodall)

“Was immer du tun kannst, oder träumst es tun zu können, fang damit an! Mut hat Genie, Kraft und Zauber in sich.“ (Johann Wolfgang von Goethe)

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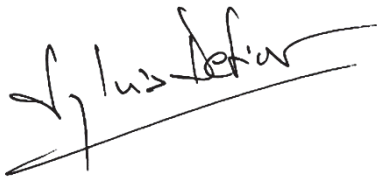

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Gomes-Koban, C., Simpson, I. C., Valle, A., & Defior, S. (2017). Oral vocabulary training program for Spanish third-graders with low socio-economic status: A randomized controlled trial. *PLoS ONE, 12*(11): e0188157. https://doi.org/10.1371/journal.pone.0188157

ABSTRACT (in English)

Although the importance of systematic vocabulary training in English-speaking countries is well recognized and has been extensively studied, few evidence-based vocabulary studies for Spanish-speaking children have been reported. In this work, two rich oral vocabulary training programs (definition and context) were developed and applied in a sample of 100 Spanish elementary school third-graders recruited from areas of predominantly low socio-economic status (SES). Compared to an alternative read-aloud method which served as the control, both explicit methods were more effective in teaching word meanings when assessed immediately after the intervention. Nevertheless, five months later, only the definition group continued to demonstrate significant vocabulary knowledge gains. The definition method was more effective in specifically teaching children word meanings and, more broadly, in helping children organize and express knowledge of words. Therefore, the explicit and rich vocabulary instruction as a means to fostering vocabulary knowledge in low SES children is recommended.

Keywords: vocabulary, training, definition, context, school children, socio-economic status, Spanish

RESUMEN (en español)

Aunque la importancia de la enseñanza del vocabulario en los países de habla inglesa está bien reconocida y ha sido ampliamente estudiada, en el caso del español apenas hay estudios de vocabulario basados en evidencia. En el presente trabajo se han desarrollado dos programas de vocabulario oral (definición y contexto), basados en la literatura sobre la enseñanza del vocabulario en niños de habla inglesa. Participaron 100 niños de tercero de Educación Primaria de zonas de nivel socioeconómico bajo. Ambos programas de entrenamiento se compararon con un método alternativo de lectura en voz alta que sirvió como control, y resultaron ser más efectivos en la enseñanza del vocabulario cuando se evaluaron inmediatamente después de la intervención. Sin embargo, cinco meses después, sólo el grupo definición continuó demostrando ganancias significativas en el conocimiento del vocabulario. Más allá de su efectividad en la enseñanza específica del significado de las palabras, el método definición pareció ayudar a los niños a organizar y expresar su conocimiento más precisamente. Se recomienda la enseñanza explícita y enriquecida del vocabulario como un medio para fomentar el conocimiento del vocabulario en niños con bajo nivel socioeconómico.

Palabras clave: vocabulario, entrenamiento, definición, contexto, niños de escuela primaria, estatus socioeconómico, español

AMPLIO RESUMEN EN ESPAÑOL

Introducción

El conocimiento del vocabulario es un aspecto crucial en el aprendizaje de la lectura. Las altas correlaciones entre vocabulario y comprensión lectora que se han reportado repetidamente en la literatura son una buena prueba de ello (Baumann, 2009). En particular, para los niños en situación de riesgo, como son los niños con bajo nivel socioeconómico o con dificultades de aprendizaje, los déficits de vocabulario son difíciles de superar y, por lo general, permanecerán a lo largo de toda su carrera académica (Biemiller y Boote, 2006; Hart y Risley, 2003; Perfetti, Landi, y Oakhill, 2007).

Los informes de investigación (por ejemplo, NICHD, 2000; Snow, 2002; Butler et al., 2010) y libros para profesionales de la educación (por ejemplo, Beck, McKeown y Kucan, 2002; Wendling y Mather, 2009), basándose en la evidencia sobre los efectos en los niños de habla inglesa, recomiendan que el vocabulario se enseñe proporcionando experiencias de lenguaje ricas y variadas, mediante enseñanza explícita de definiciones y estrategias de aprendizaje de palabras, fomentando, a la vez, la conciencia sobre las palabras. En el caso de los niños en riesgo, los estudios señalan que hay una ventaja de la enseñanza explícita en comparación a la simple exposición a las palabras (Chall, 1987; Marulis y Neuman, 2010). Según Perfetti (2007), los niños con dificultades de comprensión aprenden menos palabras durante sus experiencias lectoras que los niños con habilidades de comprensión lectora desarrolladas. Por lo tanto, con el fin de equiparar el nivel de conocimiento de vocabulario de los niños en riesgo con los logros promedio, se recomienda la enseñanza explícita y sistemática de vocabulario a una edad temprana (Biemiller, 2003).

A pesar de las recomendaciones basadas en evidencia sobre la enseñanza del vocabulario, todavía se observa escasa conexión entre la investigación y la práctica en algunos

centros educativos en España. El conocimiento del vocabulario, aunque reconocido por los maestros como una habilidad importante, a veces se trata como un componente de la comprensión lectora que no necesita instrucción específica, y su enseñanza se limita a escribir definiciones de palabras (pre-seleccionadas del libro de texto) después de leer un texto.

Una de las razones de la disparidad entre evidencia y práctica se debe al hecho de que, hasta donde llega nuestro conocimiento, no hay programas de entrenamiento de vocabulario basados en evidencia en español y apenas estudios de intervención con niños de habla hispana. Hemos encontrado solamente tres: uno de Morales, 2013, en el que no hubo grupo control y sólo se entrenaron cinco palabras, las cuales provenían todas de la misma categoría semántica. En contraposición, el de Pérez (1995), aunque utilizó un conjunto más grande de palabras de entrenamiento, los niños participantes no fueron asignados aleatoriamente a los grupos y sabemos que solamente los estudios con dicha asignación aleatoria tienen el potencial de ofrecer estimaciones precisas y confiables de los resultados de una intervención (Torgesen y Torgesen, 2008; Snowling y Hulme, 2011). Por úlitmo, el estudio con niños chilenos de Larraín et al. (2012) menciona la utilización de una asignación aleatoria de niños a los grupos y un grupo control. Sin embargo, los métodos y los análisis estadísticos no están bien descritos y no queda claro cómo interpretar los resultados en relación a los métodos. Por tanto, dada la escasez de información basada en evidencia sobre la enseñanza del vocabulario, el presente trabajo pretende analizar los efectos de dos métodos de entrenamiento de vocabulario en una muestra de niños españoles, procedentes de colegios ubicados en áreas con familias de nivel socioeconómico bajo, con una cuidadosa metodología.

El primer paso para desarrollar un entrenamiento eficaz y sistemático es tratar de entender y describir en qué consiste el vocabulario. Aunque las teorías pueden variar en algunos aspectos, tienden a coincidir en que el conocimiento del vocabulario es complejo y se desarrolla de forma incremental (Nagy y Scott, 2000). Esto significa que incluso si fuera posible evaluar

el número absoluto de palabras que un niño posee en su léxico mental, sin importar como de superficial fuera este conocimiento, la medida resultante sería una estimación incompleta del vocabulario (*amplitud* del vocabulario). Además, se debe intentar describir los aspectos cualitativos del conocimiento de las palabras, tales como su riqueza (por ejemplo, polisemia, derivación), estructura (campos semánticos y enlaces) y relación con otros conocimientos. Tomados en su conjunto, estos factores son denominados *profundidad* del conocimiento del vocabulario. Algunos autores argumentan que la profundidad del vocabulario y la eficiencia con la que se puede acceder al conocimiento sobre las palabras influyen en los procesos de orden superior en la lectura y comprensión de los textos (Perfetti, 2007; Perfetti y Hart, 2001). En otras palabras, la comprensión lectora está respaldada por un amplio (cantidad) y profundo (riqueza) conocimiento de las palabras.

En términos prácticos, esto significa que los programas de intervención deben ser amplios y tener como objetivo no sólo el aumento del número de palabras conocidas por los niños, sino también la mejora de la profundidad de este conocimiento, es decir, su calidad, precisión y uso correcto. Un ejemplo de este tipo de programa es “la enseñanza enriquecida de vocabulario", desarrollado por Beck y colaboradores (2002). Se basa en los conceptos de exposición repetida a las palabras, procesamiento profundo del significado y prácticas de recuperación. Los resultados de sus estudios con niños de 4º de Educación Primaria (EP) con bajo nivel socioeconómico mostraron resultados positivos en el conocimiento de las palabras enseñadas y en la comprensión de textos que contenían las palabras entrenadas (McKeown, Beck, Omanson y Perfetti, 1983; McKeown, Beck, Omanson y Pople, 1985). Curiosamente, una versión extendida de la intervención enriquecida que incluía actividades encaminadas a motivar a los niños a usar las palabras enseñadas fuera del aula y, por lo tanto, indirectamente a fomentar la conciencia de la palabra, fue particularmente útil para lograr mejoras significativas en la comprensión de textos. La *conciencia de la palabra* es un término utilizado en el área de la investigación de vocabulario para referirse al conocimiento metalingüístico

sobre las palabras (Graves y Watts-Taffe, 2002). Se ha argumentado que la correlación entre vocabulario y comprensión lectora puede ser parcialmente explicada por la conciencia metalingüística (Nagy, 2007). No obstante, los mecanismos sobre cómo afecta la conciencia de la palabra al aprendizaje de las palabras y a la comprensión lectora no se conocen bien y requieren más investigación.

Entre los programas de entrenamiento del vocabulario, existe evidencia sobre métodos con efectos positivos en los niños de habla inglesa, como son la *definición* y el *contexto* (Beck y McKeown, 1991; Nash y Snowling, 2006), el *mapeo semántico* (Johnson, Pittelman y Heimlich, 1986) y los *sinónimos* y *antónimos* (Graves, Juel y Graves, 2004).

Un enfoque también interesante ha sido la intervención del *vocabulario oral* como parte de un entrenamiento más amplio de la lengua oral (Snowling y Hulme, 2011). Debido a que el conocimiento del vocabulario se desarrolla antes de que los niños empiecen a aprender a leer, se ha argumentado que la comprensión del lenguaje oral podría constituir una base para el desarrollo posterior de la comprensión lectora (Oakhill y Cain, 2007). Esto significaría que en el momento de aprender a leer, la capacidad del niño para derivar los significados de las palabras del contexto se extendería desde el lenguaje oral al escrito (Jenkins, Stein y Wysocki, 1984). Esta interpretación es consistente con los hallazgos que sugieren que las dificultades específicas de comprensión lectora pueden ser, en cierto grado, un reflejo de la debilidad subyacente del lenguaje oral (Clarke et al., 2010).

El objetivo principal de esta tesis fue comprobar la eficacia a corto y largo plazo de dos métodos de enseñanza del vocabulario (*definición* y *contexto)* comparándolos a un grupo control.

Método

Selección de las palabras. Las palabras para los entrenamientos y las palabras control se extrajeron de cuentos adecuados para el grupo de edad. La selección se basó en una serie de criterios: tipo (palabras de "nivel dos", como definen Beck y colaboradores (2002)), categoría gramatical (adjetivo, verbo y sustantivo), frecuencia (frecuencia media; Martínez-Martín y Garcia-Pérez, 2004), productividad (número de formas derivadas) y riqueza (número de definiciones). Tanto la productividad como la riqueza se calcularon en base a tres diccionarios preseleccionados apropiados para los niños de EP. De la lista final de 75 palabras, 60 se seleccionaron al azar para el entrenamiento (Apéndice 1) y las 15 restantes sirvieron como palabras control (Apéndice 2). El análisis mostró que las palabras enseñadas y de control no difirieron significativamente en cuanto a longitud ($t[73] = -1.17$, $p = .247$), frecuencia ($t[73] = -0.45$, $p = .650$), riqueza ($t[73] = 0.46$, $p = .649$) o productividad ($t[73] = 0.83$, $p = .409$).

Sesiones de entrenamiento. Basándonos en el principio de la *práctica distribuida* (Cepeda, Pashler, Vul, Wixted y Rohrer, 2006), la intervención consistió en veinte sesiones, con tres sesiones por semana durante un período de siete semanas, más una sesión final. En cada sesión, a excepción de la final, se enseñaron tres palabras (un verbo, un adjetivo y un sustantivo), en grupos pequeños de cuatro a nueve niños. Sin embargo, debido a cambios imprevistos en los horarios escolares durante la fase de intervención, tres sesiones tuvieron que cancelarse. Las nueve palabras que se programaron para enseñarse en esos días se pasaron a las siguientes sesiones. Esto significó que en las últimas nueve sesiones se enseñaron cuatro palabras por sesión. Cada sesión duró 50 minutos para todos los grupos.

Grupo control. Por razones éticas y debido a que la implementación de un grupo control en lista de espera no era viable en este proyecto, a los niños del grupo control se les ofreció una intervención alternativa. Consistió en la lectura en voz alta de cuentos y la realización de manualidades relacionadas con la historia que se estaba leyendo. Los cuentos fueron los mismos

que los que se utilizaron para extraer las palabras para los grupos de entrenamiento. Así, los niños fueron expuestos a las mismas palabras que los grupos de entrenamiento, pero no recibieron ninguna enseñanza explícita del significado de las palabras.

Grupos de entrenamiento. Cada sesión para los grupos de entrenamiento se dividió en tres partes: preparación (parte I), programa principal (parte II) y juego de recuerdo (parte III). Las actividades de las partes I y III fueron idénticas para ambos grupos. En la Parte I, las palabras del día se introdujeron de forma motivante y lúdica con una actividad corta de diez minutos. El objetivo principal era conseguir que los niños se involucraran, se motivaran y estuvieran expectantes sobre las palabras. Además, tenían la oportunidad de adquirir información ortográfica y fonológica a partir de los aspectos visuales y auditivos presentados. La parte III, se basó en la idea de las prácticas de recuperación (Cepeda et al., 2006). También duraba diez minutos y consistía en juegos de recuerdo para fortalecer las vías de recuperación de las palabras nuevas aprendidas.

La parte II duraba 30 minutos. Según McKeown et al. (1985), la elección del método de enseñanza de vocabulario más apropiado depende de los objetivos de instrucción específicos. En este proyecto, había dos objetivos principales. Uno era mejorar la profundidad del conocimiento del vocabulario a través de las experiencias enriquecidas de aprendizaje. Para lograrlo, la intervención se basó en varios principios de enseñanza como la *exposición repetida* a los materiales en *diversos contextos* (Beck et al., 2002), *procesamiento en profundidad* (Craik y Lockhart, 1972; Marton y Säljo, 1984), y *andamiaje* (Vygotsky, 1978/1930-1934; Wood, Bruner y Ross, 1976). El segundo era explorar los efectos de la transferencia de aprendizaje mediante el fomento indirecto de la *conciencia de la palabra*. Se esperaba que las actividades principales tuvieran además el potencial de motivar a los niños para aprender palabras, que disfrutaran jugando e investigando sobre las palabras, su uso, su multidimensionalidad, sus matices de significado y su interrelación (Graves, 2006). Asimismo, para animar a los niños a

pensar sobre las palabras fuera de las sesiones de intervención, se incluyeron algunas actividades extra. Ejemplos de estas actividades son: pedir a los niños que averigüen la palabra más larga en español, preguntar a sus padres sobre su palabra favorita, anotar la primera palabra que escuchan cuando se despiertan etc.

Como el foco del entrenamiento era el *vocabulario oral*, todas las actividades requerían una respuesta oral de los niños. En concreto, se les pidió que prestaran atención a la información presentada en forma escrita en un papel o cartel, o en una imagen (visual), o que escucharan (auditivo), luego pensaran, y por último que explicaran o contaran algo al grupo (oral).

Método Definición. Este método implicaba la enseñanza directa de definiciones. La idea base era que las palabras se presentaran y trataran aisladamente. El foco de las actividades fueron las propias definiciones, en el sentido de que se enseñó a los niños cuáles son los componentes y características de una "buena" definición. Una definición de alta calidad es aquella que es efectiva para ayudar a entender el significado de una palabra desconocida. El papel principal del entrenador fue llamar la atención de los niños sobre la estructura y los componentes de las definiciones de palabras, tales como sinónimos, antónimos, oraciones de soporte y ejemplos. La Figura 8 muestra un resumen de las actividades desarrolladas para este grupo.

Método Contexto. En este caso las palabras enseñadas estaban incorporadas en un texto corto o diálogo. El aspecto más importante fue que el entrenador no debía dar una definición directa y explícita, típica de un diccionario al inicio de la sesión. Más bien, se animaba a los niños a formular sus propias definiciones basándose en la información en los contextos presentados, en las discusiones con el entrenador y sus compañeros de grupo, y también integrando sus experiencias y conocimientos previos. El papel principal del entrenador era ayudar y guiar a los niños en la construcción y estructuración de su propia red de conocimiento de las palabras, usando sus propias palabras y experiencias personales relevantes. Así, las actividades se

diseñaron para fomentar explícitamente la conexión entre la información nueva y el conocimiento previo. La Figura 14 muestra un resumen de las actividades desarrolladas para este grupo.

Como parte de la intervención, a los entrenadores también se les proporcionó información sobre las estrategias para mejorar la conducta en el aula (Bluestein, 2011; Pirangelo y Giuliani, 2011). Esto fue particularmente importante para esta muestra, ya que los colegios seleccionados estaban ubicados en zonas de nivel socioeconómico bajo, con mayor riesgo de problemas de conducta en el aula (Morgan, 2009).

Participantes. El proyecto fue aprobado por el comité de ética. También se obtuvo consentimiento informado de los directores de los colegios y de los padres de los niños que participaron. Se seleccionaron tres colegios públicos ubicados en zonas de bajo nivel socioeconómico. La muestra consistió en 100 niños de 3º de EP (58 niños, 42 niñas), de cinco clases, con una edad media de ocho años y dos meses (rango 7.5 – 9.6) al comienzo del estudio.

Diseño. Los niños de cada clase se asignaron aleatoriamente a uno de los dos grupos de entrenamiento, Definición (n = 33) y Contexto (n = 34), o al grupo control (n = 33). Los cálculos de potencia a priori usando G*Power (Faul, Erdfelder, Lang, y Buchner, 2007) indicaron que el tamaño de la muestra y el diseño aseguraban suficiente poder estadístico para las comparaciones principales, teniendo en cuenta el tamaño del efecto esperado (mediano/grande; Elleman et al., 2009) en el conocimiento del vocabulario (con potencia ajustada a 0.8, $f = 0.32$, equivalente a η^2 de 0.09 y d de Cohen de 0.64).

Los nueve entrenadores eran estudiantes universitarios del grado de Educación Primaria con experiencia docente y fueron asignados al azar a cada uno de los métodos.

Medidas. Los niños fueron evaluados al comienzo del curso escolar justo antes del entrenamiento (pre-test), inmediatamente al final (post-test 1) y cinco meses después (post-test

2). Solo el test de comprensión lectora se administró de forma grupal; el resto de pruebas se aplicaron individualmente en varias sesiones de aproximadamente 30 minutos cada una. Se tomaron las siguientes medidas en los tres momentos:

Vocabulario receptivo. Test de Vocabulario de Imágenes Peabody (PPVT III; Dunn, Dunn y Arribas, 2006).

Vocabulario expresivo. Subtest de Vocabulario de WISC-IV (Corral, Arribas, Santamaría, Sueiro, y Pereña, 2005).

Comprensión lectora. Prueba Comprensión Lectora de Complejidad Lingüística Progresiva (Alliende, Condemarin, y Millic, 1991).

Conocimiento de las palabras entrenadas y de control. Consistente con la noción teórica de conocimiento incremental de las palabras (Beck et al., 1987; Cronbach, 1942; Dale, 1965; Nagy y Scott, 2000), se desarrolló una medida de Conocimiento de Vocabulario (VK). La prueba VK contenía 30 palabras (15 palabras seleccionadas al azar de las 60 palabras enseñadas en los métodos de intervención, más 15 palabras de control no entrenadas). La lista final de 30 palabras fue la misma para todos los niños. La tarea consistía en pedir a los niños que explicaran el significado de las palabras. Las respuestas de los niños para cada una de las palabras se anotaron y fueron calificadas por dos evaluadores independientes, usando una escala de cero a cuatro puntos según su corrección y calidad (Tabla 6). La fiabilidad entre evaluadores en el pre-test ($\kappa = 0.79$, $p < .001$), post-test 1 ($\kappa = 0.73$, $p < .001$) y post-test 2 ($\kappa = 0.76$, $p < .001$) indicaron un sistema de clasificación aceptable (Cohen, 1960; Fleiss y Cohen, 1973). Además, los análisis de validez de criterio mostraron resultados aceptables, con correlaciones moderadas en el pre-test entre el VK y el Subtest de Vocabulario WISC-IV, $r = .59$, $p < .001$ y entre el VK y el PPVT- III, $r = 0{,}57$, $p < 0{,}001$ (Cohen, 1988).

La fidelidad de la implementación de la intervención fue controlada mediante reuniones semanales con los entrenadores, de forma separada para cada método (evitando así la contaminación) y a través de protocolos de sesión que completaban los entrenadores al finalizar cada sesión.

Preguntas de investigación

1) ¿Fueron más eficaces los dos métodos de entrenamiento explícito y enriquecido (definición y contexto) para enseñar el significado de las palabras en comparación con el grupo control?

2) ¿Qué método de entrenamiento (definición, contexto) muestra mayor efecto de transferencia de aprendizaje a las palabras no enseñadas?

3) ¿Fueron los efectos en la conciencia de la palabra de los métodos definición y contexto suficientemente robustos como para mostrar aumentos en el rendimiento en las pruebas estandarizadas de vocabulario receptivo y expresivo?

4) ¿Fueron los efectos sobre la conciencia de la palabra de los métodos definición y contexto lo suficientemente robustos como para mostrar mejoras en la prueba estandarizada de comprensión lectora?

Resultados

Los datos fueron analizados a través del método estadístico de modelo mixto (*mixed model*), que posibilita considerar simultaneamente varios factores a nível de participantes e items (Baayen, Davidson, y Bates, 2008). Además, para comprobar la efectividad de una intervención, se recomienda tener en cuenta la variación entre los participantes antes del inicio del entrenamiento (Van Breukelen, 2006). Por eso, las medidas de pre-test de conocimiento del

vocabulario fueron incluidas como covariable en un diseño con modelo mixto ANCOVA, con un factor intersujeto Grupo (definición, contexto y control) y un factor intrasujeto Tiempo (post-test 1 y post-test 2). Los coeficientes *b* representan una estimación de la diferencia entre los grupos comparados.

De acuerdo con lo esperado, al final del entrenamiento (post-test1), se encontraron diferencias significativas en el conocimiento de las *palabras enseñadas* en los dos grupos de entrenamiento en comparación con el grupo control ($b_{\text{definición}}$ = 0.31, *SE* = 0.12, 95%IC [0.08, 0.53]; contexto: b_{contexto} = 0.40, *SE* = 0.12, 95%IC [0.17, 0.62]). No se encontraron diferencias significativas entre los dos métodos de entrenamiento. En el post-test 2, se encontraron diferencias significativas en el conocimiento de las palabras enseñadas solamente entre el grupo definición y el grupo control ($b_{\text{definición}}$ = 0.25, *SE* = 0.12, 95%IC [0.03, 0.48]).

Con relación a las *palabras control* (no enseñadas), el patrón de diferencias fue distinto según el momento de evaluación. En el post-test 1, solamente el grupo contexto logró ganancias significativamente más grandes en comparación al grupo control ($b_{contexto}$ = 0.28, *SE* = 0.10, 95%IC [0.08, 0.48]). En contraste, en el post-test 2, solamente el grupo definición demostró mayor conocimiento de las palabras control en comparación con el grupo control ($b_{\text{definición}}$ = 0.25, *SE* = 0.10, 95%IC [0.05, 0.45]). No hubo diferencia entre los grupos de entrenamiento en el post-test 1 y post-test 2.

En las medidas estandarizadas de vocabulario y comprensión lectora no se encontraron diferencias significativas entre los grupos de entrenamiento y el grupo control en el post-test 1 y post-test 2.

Discusión

Este estudio, pretende comprobar la eficacia de dos entrenamientos para el fomento del vocabulario, en comparación con un grupo control de lectura en voz alta, en una muestra de niños de tercero de EP, de colegios situados en una zona de nivel socioeconómico bajo. De acuerdo con mucha de la evidencia de estudios con niños de habla inglesa, los principales resultados confirman la superioridad de la enseñanza enriquecida del vocabulario. Es importante señalar que los niños del grupo control fueron incidentalmente expuestos a las palabras de entrenamiento, lo que podría haber ocasionado algún aprendizaje y, con ello, podría hacer más difícil encontrar diferencias estadísticamente significativas entre los grupos de entrenamiento y el grupo control. Sin embargo, tanto el método de enseñanza enriquecida del vocabulario definición como el de contexto fueron más efectivos en comparación con la simple exposición a las palabras del grupo control.

Cinco meses después de la intervención, los niños del método de definición todavía mostraron una ventaja de aprendizaje significativa sobre el grupo control pero no el grupo contexto. Esto sugiere que los efectos positivos del método contexto se produjo sólo imediatamente después de las sesiones. En cambio, el método definición proporcionó una mejora persistente en el conocimiento de las palabras.

Una posible explicación de la ventaja a largo plazo del grupo de definición reside en la propia metodología y su adecuación para niños de esta edad. En términos evolutivos, los niños estaban en una edad en la que las habilidades metalingüísticas se empiezan a desarrollar (alrededor de 8 años de edad; Gombert, 1992). Así, reflexionar sobre el lenguaje y expresar el conocimiento de la palabra en forma de una definición general descontextualizada puede ser un reto para estos niños. Debido a que las actividades en el grupo definición fueron diseñadas para identificar claramente los elementos relevantes de una definición, así como para enseñar cómo enlazar los elementos y estructurar las definiciones, proporcionaron a los niños un apoyo

adicional en la organización y expresión del conocimiento. En otras palabras, además de acumular nuevos conocimientos semánticos, estaban aprendiendo a expresar mejor el conocimiento semántico bajo la forma de una definición claramente estructurada y siguiendo un modelo explícito. En contraste, en el grupo contexto, aunque estuvieron expuestos a más palabras e historias en comparación con los del grupo definición, la forma en que este conocimiento se agregó a las estructuras de conocimiento ya existentes fue menos sistemática. En consecuencia, estos niños dependían más de sus propias estrategias de aprendizaje para organizar el conocimiento que se iba presentando. Por otra parte, la manera en que las actividades se diseñaron implicaba que el éxito de este método dependía más de la capacidad del entrenador en moderar las discusiones y las historias personales. Como resultado, a pesar de que los niños fueron capaces de expresar algo del conocimiento de las palabras a corto plazo, este conocimiento puede haber sido establecido con estructuras inestables que no facilitaron la retención y la acumulación de conocimientos a largo plazo.

En cuanto al potencial de los métodos de entrenamiento para producir efectos de transferencia de aprendizaje a palabras no enseñadas, sólo los niños del grupo contexto mostraron niveles de conocimiento significativamente mayores para las palabras de control inmediatamente después de la intervención. No obstante, la mejora del grupo definición sobre el grupo control casi logró alcanzar significatividad [IC del 95%: -0,01, 0,39]. Dado este intervalo de confianza, interpretamos el método definición también como más eficaz para mejorar el conocimiento de palabras en relación al grupo control.

La eficacia del método contexto coincide con nuestras predicciones; además de fomentar indirectamente la conciencia de la palabra, se diseñó para elicitar palabras relacionadas y permitir que los niños encontraran un mayor número de ellas en los contenidos de los diálogos e historias. Esta combinación de efectos podría haber aumentado la probabilidad de adquirir conocimiento sobre palabras no enseñadas. Sin embargo, esperábamos encontrar una ventaja del método contexto no sólo sobre el grupo control, sino también sobre el grupo

definición en el post-test 1. El que no se encontrara puede deberse, en parte, a lo que ya se comentó: el éxito de las actividades en el método contexto dependía más de la habilidad del entrenador y el método definición parecía permitir que los niños describieran mejor su conocimiento del vocabulario. Curiosamente, cinco meses después, se encontró un patrón similar al observado con las palabras enseñadas. Los niños en el grupo definición mostraron niveles significativamente más altos de conocimiento de las palabras no enseñadas en comparación con los niños del grupo control, pero la mejora del grupo contexto había desaparecido. Esto apoya nuevamente la idea de que los niños en el grupo definición no sólo obtuvieron conocimiento semántico, sino que también parecen haber logrado la capacidad de expresar mejor su conocimiento de palabras en general y, lo más importante, tanto las ganancias en conocimiento semántico como la mejor capacidad de expresión del conocimiento parecen permanecer, como se observa en los efectos a más largo plazo.

La mejora a largo plazo del método definición con las palabras no enseñadas podría interpretarse de dos maneras. Una se refiere al efecto de la habilidad de conciencia de la palabra como un medio para fomentar el aprendizaje de palabras nuevas más allá de las sesiones de intervención. Si este método fue eficaz para despertar en los niños curiosidad y atención hacia las palabras en general, es posible que, además de las enseñadas, los niños mejoren su conocimiento de las palabras control. Sin embargo, si ese fuera el caso, también se esperaría encontrar ganancias estadísticamente significativas en las medidas estandarizadas de vocabulario receptivo y expresivo en los niños del grupo definición. No obstante, no se encontraron, lo que sugiere que ninguno de los métodos tuvo un impacto significativo en la habilidad de conciencia de la palabra.

La segunda explicación implica el efecto general ya mencionado del método definición, que permite a los niños expresar el conocimiento con mayor precisión. Si este fuera el caso, también se esperaría encontrar mejoras estadísticamente significativas a favor del grupo definición en el subtest de vocabulario WISC-IV, que de manera similar mide la capacidad para

definir palabras oralmente. Sin embargo, no se encontraron, lo que plantea la cuestión de por qué se hallaron diferencias en la prueba VK, pero no en la prueba estandarizada de vocabulario expresivo (que también contenía palabras no enseñadas). Creemos que la prueba VK es más sensible que el subtest de WISC-IV, tanto en términos de los ítems como de la escala de puntuación. En primer lugar, todas las palabras eran adecuadas para la edad, ya que fueron extraídas de libros apropiados para esta etapa. Por el contrario, el test WISC-IV está diseñado para su uso con una amplia gama de edades (de 6 a 16 años de edad). De este modo, las primeras palabras en el WISC-IV (por ejemplo, vaca) son probablemente demasiado fáciles para la mayoría de los niños de la muestra mientras que las últimas (por ejemplo, locuaz) son demasiado difíciles. En consecuencia, estos ítems tendrían un poder de discriminación muy bajo y un número reducido de ítems sería responsable de la mayoría de la variación en las puntuaciones, lo que reduciría su sensibilidad. El segundo factor a considerar es la diferencia de escala entre las dos medidas. La prueba VK empleó una escala de cinco puntos, que permitiría la captura de pequeños incrementos en el conocimiento de la palabra, mientras que el subtest de vocabulario del WISC-IV utiliza una escala de tres puntos (desconocida/ más o menos conocida/ conocida).

Finalmente, no se encontraron diferencias significativas en comprensión lectora entre ninguno de los grupos. Aunque algunos estudios muestran una mejora en comprensión después del entrenamiento de vocabulario (McKeown et al., 1983; McKeown et al., 1985), los textos que utilizaron fueron seleccionados para la intervención y la palabras enseñadas aparecían en los textos. En contraste, en este trabajo, ninguna de las palabras entrenadas apareció en los test estandarizados de comprensión lectora. En este sentido, se buscaban efectos de transferencia más generales del vocabulario a la comprensión lectora. Los resultados sugieren que los métodos de entrenamiento no fueron suficientemente sólidos para fomentar la conciencia de la palabra hasta el punto de lograr una contribución significativa al aumento del rendimiento en la medida de comprensión lectora. Cabe señalar que, si bien las hipótesis sobre los efectos

directos del entrenamiento se basaron en evidencias empíricas claras sobre el tamaño del efecto (Elleman et al., 2009), la hipótesis sobre el impacto de los efectos de la conciencia de la palabra en la comprensión lectora (y, de hecho, el vocabulario expresivo y receptivo) se basó más en la teoría, sin una evidencia empírica clara para un tamaño de efecto específico. Los resultados sugieren que tal vez podría existir un efecto pequeño, pero no tuvo el poder para detectarlo.

Tomados en su conjunto, los resultados sugieren que la intervención de vocabulario enriquecida basada en el método definición fue el más eficaz para la enseñanza del significado de las palabras. Además, los niños se beneficiaron de efectos duraderos y específicos del entrenamiento en lo que respecta a la estructuración y expresión de su conocimiento de las palabras con mayor precisión.

Limitaciones y futuros estudios. Es importante señalar que hubo niños que mostraron comportamientos disruptivos y las estrategias utilizadas al principio del entrenamiento no fueron suficientes para crear un ambiente de aprendizaje adecuado. Como respuesta a esta situación, se introdujeron estrategias de motivación extrínsecas, a partir de la séptima sesión para tratar de minimizar los efectos negativos en el proceso de aprendizaje. Una descripción de los casos excede el alcance de este trabajo, pero es relevante destacar que, considerando los numerosos problemas de conducta observados durante el entrenamiento, los efectos positivos encontrados son significativos y una razón más para creer que los niños son muy buenos aprendices de palabras cuando están expuestos a un entorno de lenguaje rico. No obstante, los aspectos de clima de clase y de conducta, deberían ser tenidos en cuenta en las intervenciones. Una alternativa sería implementar un entrenamiento más extenso, incluyendo una fase de prueba para permitir que los entrenadores conocieran a los niños y cogieran experiencia en el manejo del grupo.

Una segunda limitación es el cambio del plan original de enseñar tres palabras a enseñar cuatro por sesión, debido a que los colegios cancelaron tres sesiones por razones de

organización escolar. Con eso, se pudo dedicar menos tiempo a enseñar cada una de las palabras del día, y los niños tuvieron menos tiempo y oportunidad para hablar de cada palabra. Potencialmente, esto puede haber reducido la efectividad de los dos métodos de entrenamiento.

A pesar de estas limitaciones, constituye una aportación importante y contribuye a suplir la escasez de estudios en el área de la enseñanza del vocabulario en español. Hasta donde sabemos, es el primer programa de entrenamiento de vocabulario basado en evidencia realizado con niños de habla hispana de educación primaria que ha utilizado un diseño controlado aleatorizado. Además, la inclusión de una evaluación de seguimiento a los cinco meses permitió evaluar la eficacia a largo plazo de los dos métodos, lo que posibilitó identificar un cambio de los efectos del post-test 1 al post-test 2. Las medidas a largo plazo no sólo permiten una estimación más precisa de los costos y beneficios de las intervenciones, sino que permiten también una comprensión más profunda de los efectos de aprendizaje específicos potencialmente desencadenados por los programas. La inclusión de los protocolos de sesión, como medio para acceder a la fidelidad a la implementación, también permitió identificar posibles problemas y tomar medidas correctivas en consecuencia.

Para estudios futuros, pretendemos investigar más detalladamente los efectos de transferencia del método definición en relación con el fomento de la formación de conceptos, así como una estrategia de autoenseñanza al aprender nuevas palabras o expresar el conocimiento de las palabras, especialmente para niños con dificultades de comprensión del lenguaje y con bajo nivel de conocimiento del vocabulario. La característica estructurada del método podría ayudar a los niños cuando aprenden palabras nuevas de forma independiente, ya que son entrenados para prestar atención a la información específica y para desarrollar mecanismos de almacenamiento de las palabras apoyados por una preestructura. Desde la perspectiva de la práctica, también es un método más transparente y fácil de aplicar por los

maestros menos experimentados, que podrían confiar más en las instrucciones dadas en un manual.

Por último, se está preparando el manual del programa de vocabulario en español con una descripción de las teorias y de las actividades en los grupos de entrenamiento para maestros de EP. Sin embargo, somos conscientes de las limitaciones de la investigación y de la representatividad de la muestra, así como de la complejidad y dinámica de la realidad escolar. Por eso, se recomienda la utilización del programa de definición como base para el desarrollo de nuevos estudios de intervención en vocabulario y para debatir con educadores que trabajan con poblaciones de habla hispana.

PREFACE

The field of language research has always fascinated me. As far as I can remember I enjoyed very much learning about the "little secrets" of a language. Being an enthusiastic language learner and researcher gave me the opportunity to dive into the deep waters of grammar, enjoy the beautiful melody and nuances of sounds, and perceive fine differences between four languages: Portuguese, English, German, and Spanish (learned in this order). I have kept in memory many of the special moments of joy I experienced along the way and I would like to take this opportunity to share a few.

I remember how fascinated I was when I realized the fine difference between Spanish and English in the process of word derivation. It seems that in English an effort is made to keep spelling consistent with the associated cost of changing pronunciation, as in the word pair heal/health, or sign/signal. In contrast, the opposite happens in Spanish and spelling is adjusted to maintain consistent pronunciation, as in the word pairs dulce/endulzar [sweet – to sweeten] or coger/cojo [to take – I take].

False cognates, proverbs and sayings are another infinite source of pleasure; for example, the saying "to kill two birds with one stone" in English. Due to my vegetarian life style, I have to admit I was very relieved to find out that I could hit two flies with one swatter in German ("*zwei Fliegen mit einer Klappe zu schlagen*"), instead of killing a bird in English or a rabbit in Portuguese ("*matar dois coelhos com uma cajadada só"*).

One last example, which I just cannot resist mentioning, is the nature of word formation in German. What a delight it is to observe how German words can be put together and end up with a new word formed by many other small words, such as *Straßenbahnhaltestelle* [tram stop]: *Straße* [street] + *Bahn* [train] + *Halt* [stop] + *Stelle* [place] or *Streichholzschachtel* [box of matches]: *Streich* [scratch] + *Holz* [wood] + *Schachtel* [box]. As a German language learner,

it is a wonderful challenge for oneself to try to read them aloud when you encounter them for the first time, as well as being a source of laughter for the native speakers, as in Prof. Schabmann's example "Blumentopferde", which is the word for potting soil – literally flower-vase-soil and read as *Blumen-topf-erde* – but which a non-native speaker of German might parse as a kind of horse as *Blumento-Pferde*. The most popular example remains the *Donaudampfschifffahrtsgesellschaftskapitän* (translated to French by Michèle Mètail in her "Donauverse" as "*le capitaine de la compagnie des voyages en bateau à vapeur du Danube*") and all of its playful variations[1].

This experience of learning various languages allowed me to develop a kind of "feeling" which seems to facilitate learning more about other languages. However, the fact of just learning to speak and read in the language did not satisfy completely my curiosity and great fascination. I wanted to understand how exactly it is that most human beings are capable of understanding and producing oral language in such a natural manner and how it later influences the sometimes effortful learning of written language, especially reading and text comprehension.

The phenomenon of oral language acquisition is really quite impressive. When we see how quickly and easily typically developing young infants learn language, it is hard to believe that it is such a complex process as suggested by the literature. Being a mother myself has literally brought the language development theories I have learned and taught at the university to life. Through my mother-biased eyes I could observe my daughter progressing from crying as the only form of communication to cooing (at two months), babbling (at six months), and saying her first words (at ten months) and sentences (at twelve months). I am already very

[1] The German word "Donaudampfschifffahrtselektrizitätenhauptbetriebswerkbauunterbeamtengesellschaft" with 80 letters won the record of the longest existing word in the Guinness Book of Records (1995). I wish you a lot of fun in trying to read it aloud.

excited to know how she will cope with growing up with two languages. But, this is another story.

It is clear that developing language involves a great number of aspects. In this work, I concentrate my search for more knowledge on *words*, as they are the building blocks of language, and how a rich *vocabulary knowledge* can facilitate the processes implicated in learning to read.

This quest begins with a definition of vocabulary and word knowledge in the eyes of science. Also, processes of learning a word, building or developing vocabulary and how it relates to reading abilities will be described. Our journey ends with an overview of the literature about methods of fostering vocabulary in the elementary school level to ameliorate not only vocabulary knowledge, but also to facilitate reading comprehension.

I hope the reader will enjoy this adventure through the "valley of sound" and the "forest of sight" to visit "dictionopolis" at the "foothills of confusion" and finally end on the "island of conclusion" (or more confusion…) that lies in the "sea of knowledge", as much as I have.[2]

[2] Expressions in inverted commas are from the children's book "The Phantom Tollbooth", by Norton Juster; a must for lovers of language and children's books.

1. INTRODUCTION

"Words matter, for words are the tools of thought, and you will often find that you are thinking badly because you are using the wrong tools, (...)." (What a Word! by A. P. Herbert, 1935)

Comparative studies periodically carried out in Europe, such as PISA (Programme for International Student Assessment) and PIRLS (Progress in International Reading Literacy Study), generate much media interest and intense discussion, and serve to remind us about the situation regarding our children's reading education. Putting aside criticisms in relation to the development of instruments and comparability within such massive studies (Hopmann, Brinek, & Retzl, 2007), Spanish children's reading literacy levels on the PISA assessment oscillated between *average* and *below average* from 2000 to 2006 (Organisation for Economic Co-operation and Development [OECD], 2001, 2004, 2007). In the years that followed, Spanish children did not improve and their performance stayed at the average level compared to the other participating countries (OECD, 2010, 2013, 2017).

Although the majority of studies which have examined the best ways to teach children to read have been carried out in English, the scientific community has recently been trying to promote research in the teaching of reading to children in other languages. Cooperation in cross-linguistic studies as well as key scientific meetings being held in other regions apart from the USA and Europe are helping spread the word and inspire new generations of researchers. In Spain, some authors, along with the Ministry of Education, have attempted to compile important findings related to reading research in the form of local and national reports (Angulo-Domínguez et al., 2011; Gobierno Vasco, 2006; Ministerio de Educación, Cultura y Deporte [MECD], 2012). However, most of these reports are largely based on results of studies with English-speaking populations. This can be problematic, as **English and Spanish differ in many aspects**, including in areas related to the transparency of the orthography (Seymour, Aro,

& Erskine, 2003), prosodic features (Dauer, 1983; Calet et al., 2015), as well as differences in speech production (Carreiras & Perea, 2004) and the rate of learning to decode from print (Seymour et al., 2003). In fact, in the case of transparency, Share (2008) has argued that English is an outlier orthography and that common models of reading developed using evidence gathered from English-speaking participants are "ill equipped to serve the interests of a universal science of reading" (p. 584). Consequently, it is plausible that teaching vocabulary in English and Spanish may require different strategies. Additionally, the language differences identified have been associated with tuitional practices (e.g., Manolitsis et al., 2009). Thus, it is possible that practices in the classroom between Spain and English-speaking countries need to be adapted due to differences in the attitude and practices of parents related to supporting their children's literacy development at home. For these reasons, there is still a need to generate more evidence supporting theoretically-motivated reading models which are applicable to Spanish-speaking populations, taking into account environmental and language-specific differences.

According to the influential American based National Reading Panel report (National Institute of Child Health Development [NICHD], 2000), upon which the above mentioned Spanish reports were based, the most important aspects involved in reading are alphabetic, fluency, and comprehension (vocabulary, text comprehension, and comprehension strategies) abilities. The present work focuses on the investigation and understanding of one important aspect related to the reading comprehension ability, namely **vocabulary**.

The importance of vocabulary knowledge is multifaceted. From a scientific point of view, the interest in vocabulary instruction in regard to literacy acquisition mostly stems from the consistent finding of a high and significant correlation between vocabulary and **reading comprehension** (Anderson & Freebody, 1981; Baumann, 2009). Knowing the meaning of the words in a text is clearly not the only factor underpinning the complex processes involved in

reading comprehension, but it is an indispensable one in order to understand the message which the writer wants to communicate. There are many hypotheses that try to explain the nature of the relationship between vocabulary knowledge and reading comprehension, but this relationship is not yet well understood (Baumann, 2009).

In recent years, the relationship between vocabulary knowledge and **decoding** has also been investigated. Some authors suggested that a large vocabulary demands better organizational structure and knowledge integration and these properties could support the retrieval of information while trying to read a word (Ziegler & Goswami, 2005; Walley, 1993). Published results so far are not clear (Nation & Snowling, 2004; Ricketts, Davies, Masterson, Stuart, & Duff, 2016; Ricketts, Nation, & Bishop, 2007). In Spanish, there seems to be a small but significant correlation between the two (*in preparation*). Nevertheless, the inconsistent findings suggest that further research is needed to clarify in which circumstances a correlation between vocabulary knowledge and word reading is present and, also, if this relationship varies depending on the characteristics of the language.

Vocabulary is also an indicator of **intellectual cognitive development** (Calfee & Drum, 1986). This is the reason why vocabulary tests, such as the Peabody Picture Vocabulary Test (PPVT-III; Dunn, Dunn, & Arribas, 2006), are commonly used as a measure of verbal intelligence. Some authors argue that a broad and deep vocabulary knowledge would enable us to differentiate and think more precisely about ourselves and the world around us (Stahl & Nagy, 2012). This is in accordance with child cognitive development theories which argue that qualitative differences in the way children express their word knowledge can give an insight about their cognitive development in terms of concept formation (Barsalou, 1993; Feifel & Lorge, 1950; Piaget, 1926, p. 246; Weiser, 1969).

Additionally, vocabulary knowledge is a critical factor for success in a child's formal educational path. When children enter school they usually begin from different starting points

(Perfetti, Landi, & Oakhill, 2007). Due to many factors, such as home literacy environment and pre-school attendance, these starting points might include significant differences in vocabulary knowledge. In particular, low **socio-economic status** (SES) has been associated with lower levels of vocabulary knowledge (Fernald, Marchman, & Weisleder, 2013; White, Graves, & Slater, 1990). Rather worrisome is the fact that deficits in vocabulary knowledge in the primary years seem to be hard to overcome and can keep students in a disadvantageous position throughout their academic trajectory (Biemiller & Boote, 2006).

In English-speaking countries, in which the importance of fostering vocabulary using evidence-based teaching methods is more recognized, there are still skeptics who argue that there are too many words to be taught explicitly (which is the recommended technique), if we consider the complexity of word knowledge (Nagy & Scott, 2000) and the number of words learned in the school years (Nagy, Anderson, & Herman, 1987; Graves, 2006). However, this does not necessarily mean that explicit teaching cannot operate as an additional learning channel along with others (Rupley & Nichols, 2005), such as incidental learning (Carlisle, Fleming, & Gudbrandsen, 2000), learning word meanings from context (Kuhn & Stahl, 1998), wide reading (Jenkins, Stein, & Wysocki, 1984), and reading aloud (Beck & McKeown, 2001), all of which have also shown their value in supporting vocabulary development.

Nevertheless, in the case of **at-risk children**, comparative studies point to an advantage of explicit teaching of vocabulary for kindergarten children (Marulis & Neuman, 2010) as well as for elementary school children (Chall, 1987). These authors argued that the encounters with words and text experienced by children with reading difficulties, low motivation to read, and poor language environment will not be equally productive or necessarily lead to vocabulary gain compared to the word encounters experienced by average achievers. In accordance with this view, Perfetti (2007) claims that children with comprehension difficulties will learn fewer words during their reading experiences than children with well-developed reading

comprehension skills. Therefore, to try to raise the level of at-risk children's vocabulary knowledge to that of average achievers, explicit and systematic vocabulary training at a young age is recommended (Biemiller, 2003).

There are many **vocabulary intervention** studies with English-speaking children that have shown gains on vocabulary knowledge. A few of these studies have also shown gains on reading comprehension, albeit lower in magnitude (Elleman, Lindo, Morphy, & Compton, 2009; Stahl & Fairbanks, 1986). According to Graves (2006), four important elements should be considered in any vocabulary instruction: (1) provide rich and varied language experiences, (2) teach individual words, (3) teach word-learning strategies, and (4) foster word awareness. Single methods that have shown positive effects for explicitly teaching individual words to English-speaking children involved, for example, using **definitional** and **contextual** information (Beck & McKeown, 1996; Nash & Snowling, 2006; NICHD, 2000), semantic mapping (Johnson, Pittelman, & Heimlich, 1986) and synonyms-antonyms combinations (Graves, Juel, & Graves, 2004).

Another interesting focus of interventions targeted at ameliorating reading comprehension difficulties has been the training of **oral language** abilities, with oral vocabulary as one element of instruction (Snowling & Hulme, 2011). As oral language develops before children learn to read, it has been argued that oral language comprehension could form a base for the later development of reading comprehension (Oakhill & Cain, 2007). This argument is consistent with findings suggesting that specific reading comprehension difficulties can be, to a certain degree, a reflection of underlying oral-language weakness (Clarke, Snowling, Truelove, & Hulme, 2010). In relation to vocabulary, this could mean that a child's ability to learn word meanings from oral context would influence the same ability for written contexts (Jenkins, et al., 1984).

Listening to and speaking about words can be a great source of vocabulary learning at all ages (Graves, 2006). Nevertheless, reading instruction usually focuses on practicing to decode from print in the beginning elementary years (mostly high frequency and already known words), and only slowly moves towards strongly emphasizing comprehension of words and content from written text in later years (Rose, 2006). Thus, a rich oral vocabulary training for children in the transition years, which would correspond to third- or fourth-grade in Spain, could potentially provide these children with extra support in boosting their word learning, and thus assist children to better cope with the emerging higher reading comprehension demands.

One aspect of the **Spanish** educational system that is worth noting is that there is no nationally coordinated teaching program, and each autonomous community is left to decide how school programs will be implemented. Thus, teaching practices vary from region to region. In Andalucia, for example, the government does not mandate in detail how reading and literacy should be taught. Perhaps partially due to this factor, the teaching of vocabulary in the elementary school level in Spain is not always in line with the recommended evidence-based practices. According to observations made during our work in schools, one teaching method consists of solely giving teachers lists of words (e.g., "*Vocabulario Común y Fundamental*" by Ferrándiz-Mingot, 1978) that children are required to learn in each primary grade. As a consequence, vocabulary knowledge, although recognized by teachers as an important skill, is sometimes treated as a component of reading comprehension that does not need specific instruction, and the teaching of vocabulary is then confined to writing definitions of words (sometimes pre-selected from the text book) after reading a text passage.

While there is a disconnect between research and practice in many countries (e.g., Pelatti et al., 2014), the gap between evidence and practice in vocabulary instruction in some Spanish schools could also be a reflection of the lack of theoretically motivated, comprehensive evidence-based vocabulary training studies carried out in Spanish. To the best of our

knowledge, there are only three published studies that have examined vocabulary training in Spanish-speaking children (Larraín, Strasser, & Lissi, 2012; Morales, 2013; Pérez, 1995). In the Morales study (2013), no control group was used and the sample of pre-school children were just taught five words from the same semantic category. In contrast, although the Pérez study (1995) with Spanish fifth-graders used a larger set of training words, it did not use a random allocation of children to groups. The problem with this is that only randomized controlled trials have the potential to offer an unbiased and more reliable basis to estimate the effectiveness of a treatment (Snowling & Hulme, 2011; Torgesen & Torgesen, 2008). The study with Chilean kindergarten children by Larraín et al. (2012) does mention the use of a randomized assignment and a control group, but procedures and statistical analysis are poorly reported and, consequently, the results are hard to interpret. Accordingly, an increase in the number of theoretically motivated, well-designed studies on vocabulary instruction carried out in Spanish schools would not only provide evidence for the effectiveness of such programs, but it would also have the potential to raise awareness and trigger discussions in schools about more effective ways of fostering vocabulary development.

In sum, the knowledge we have about words and word meanings can affect the development of our reading abilities, especially regarding reading comprehension, as well as our learning experiences with words and text. It may also influence the way we think about ourselves and the way we perceive and describe the world. Over the long term, our level of vocabulary knowledge has the potential to make our academic trajectory smooth or rocky. It is clear that vocabulary is only one component of the complex phenomena and systems mentioned, but it is definitely a relevant one that needs to be investigated further. Most importantly, it is necessary to bring new research information into the schools to support and motivate teachers to practice systematic vocabulary instruction.

To that end, this project was dedicated to the study and understanding of how children acquire vocabulary, the role that vocabulary knowledge plays in reading, and what teaching methods can be used to teach vocabulary effectively to Spanish-speaking children in primary school. More specifically, the main goals of the analysis carried out for this thesis are to evaluate the efficacy of two methods of oral vocabulary training to improve vocabulary knowledge of third-grade Spanish-speaking children and to explore the learning transfer effects of these methods to items not taught as well as to explore transfer effects to children's reading comprehension abilities. Given the previously mentioned observation that at-risk children benefit from the explicit teaching of vocabulary (Chall, 1987; Marulis & Neuman, 2010), schools located in low income areas were targeted.

As anybody who has undertaken intervention studies will know, there are many organizational and implementation difficulties involved, especially when they are carried out in real school settings. Accordingly, great efforts were made in the present study to use a rigorous research methodology and, at the same time, to comply with ethical guidelines ("Task Force on Evidence-Based Interventions in School Psychology;" American Psychological Association [APA], 2003). To our knowledge, this is the first comprehensive vocabulary intervention study with Spanish-speaking primary school children that has a longitudinal nature, including a third time point to assess for long-term effects delivered at the school setting, and employed randomized controlled trial design. Additionally, the use of more advanced statistical data-analysis techniques (mixed-effects modeling) in comparison to the more traditional repeated measures ANOVA was undertaken to increase the reliability of interpretations drawn from the results (Baayen, Davidson, & Bates, 2008).

The coming section will provide the overall theoretical framework upon which this work is based. This will be followed by a detailed discussion of the design used in the intervention, along with a presentation of the results and their interpretation. Finally, the implications of the

results for the educational practice of teaching vocabulary in Spanish schools are discussed and evidence-based suggestions are made for a rich and effective vocabulary instruction in the primary grades.

2. THEORETICAL BACKGROUND

2.1. What is vocabulary?

> *"'Mind and matter,' (...) 'glide swift into the vortex of immensity. Howls the sublime, and softly sleeps the calm Ideal, in the whispering chambers of the Imagination.'" (Martin Chuzzlewit by Charles Dickens, 1844)*

According to the online Oxford Dictionary, *vocabulary* is defined as "the body of words known to an individual person." In common terms, vocabulary is a concept used to represent the number of words one knows, where knowing a word is generally accepted as knowing what the word means. In scientific terms, despite the long tradition of research in the area of vocabulary, no clear definition of vocabulary knowledge has yet been agreed upon, even though its complexity is recognized (Nagy & Scott, 2000). Word knowledge is composed of many facets of linguistic information, such as prosody (intonation and stress), phonology (sound units or phonemes), orthography (graphemes and rules for written representation), morphology (word formation), syntax (grammatical function), and semantics (meaning) (Perfetti, 2007). It also comprises metalinguistic information (word awareness) (Stahl & Nagy, 2012), pragmatics and socio-cultural rules on its usage (MacDonald, 1997). Additionally, word knowledge is assumed to encompass mental models of imagery and experiences with words and information about words' interrelations (Barsalou, 2012; Kintsch, 1988; Lehrer & Kittay, 1992).

Theoretical approaches attempting to explain how this complex knowledge exists and functions revolve around the terminology *mental lexicon*.

2.1.1. The mental lexicon: Our word knowledge storage system

The investigation of semantic knowledge in the mind is a field of research that attracts attention from the most various disciplines. Linguists, philosophers, computer scientists, and

psychologists have all been trying to unveil the complex phenomena behind the construction of knowledge about and around words as well as how this knowledge is represented in our minds.

The concept of mental lexicon appears to have been first introduced by Treisman in 1961 (as cited in Coltheart, Rastle, Perry, Langdon, & Ziegler, 2001). In her doctoral thesis, she mentioned a "mental dictionary" with individual entries representing individual words and a system of word identification that would involve matching the stimulus to the stored entries. Since then, the whole idea of and around the mental lexicon has been under constant debate. The discussions range from the acknowledgement, or not, of the existence of a mental lexicon (or more than one) to how it is organized, what information it contains, and how it functions (Aitchison, 2003; Coltheart, 2004; Elman, 2009; Lehrer & Kittay, 1992; Seidenberg, 2005). A full description of all theories would go being the scope of this work, as none of these theories are being directly examined in this thesis. Nevertheless, a brief overview of the different accounts regarding **form** of and **access** to the mental lexicon and the **structure** of semantic knowledge in the mental lexicon should provide the reader with enough information to be able to relate theory to the practical recommendations exposed in the sections to come.

There are two main schools of thought regarding the **form** of lexical knowledge which have emerged from research looking at how single words are read aloud. These two viewpoints differ as to whether lexical knowledge is local (*localist*) or distributed in nature (*connectionist*).

The view considered traditional is the localist, in which our knowledge about words is considered to be stored in a system of mental representations, called the mental lexicon. Researchers who believe in the existence of lexicons view the mental lexicon as containing local representations (word specific entries) with separate domains for specific linguistic information (phonology, orthography, and meaning). Within each domain, information would be represented in nodes (one per word) that are interconnected (Coltheart, 2004). The rationale behind the arguments of the localists is that different patterns of performance in reading aloud

and *lexical decision* tasks would indicate the existence of local separate mental lexicons for phonological, orthographic, and semantic information. Lexical decision tasks consist of presenting participants with a word, a pseudoword (non-existing word with a letter/phoneme string that follows the grapho-/phonotactic rules of a language) or a non-word (random letter/phoneme string) in visual or auditory form and asking them to decide if the presented stimulus is a real word or not by pressing two different keys. Subsequently, in the case of real words, participants are sometimes asked to explain what they mean.

There are three basic expectations that follow from the localist logic. The first expectation is that if only the phonological lexicon was defective, acoustically presented words could not be recognized, although access to their meaning could still be accomplished through seeing the written representation of the word or seeing a picture representing the word. The opposite pattern would be expected if the orthographic lexicon was impaired: acoustically presented words would be recognized and meaning could be retrieved, but the printed form of words would not be recognized and could not provide direct access to semantics. The second expectation is that if only the semantic lexicon was defective, there would be no way of accessing meaning, independent of normal performance in the tasks of word recognition in auditory or written form. The third and last expectation is that if only the connection between lexicons were impaired, for example between the phonological and the semantic lexicons, but the lexicons themselves were intact, then both knowledge lexicons could be accessed separately: a phoneme string could be correctly recognized as a word, but no meaning would be available; at the same time, a visual form of the same word could be recognized and meaning would be correctly retrieved.

Indeed, there is ample evidence that supports the idea of separate phonological and orthographic lexicons as argued by the localists, for example, in the cases of *pure alexia* (reading comprehension impairment), in which patients are unable to read aloud and understand

printed words, but spoken words can be recognized and understood (Coltheart, 1998). Also the opposite pattern has been found in patients who suffer from *word deafness*, that is, who can access meaning when reading words, but do not understand spoken words (Franklin, Turner, Ralph, Morris, & Bailey, 1996; Howard & Franklin, 1988). There is a wealth of further evidence which supports the existence of separate lexicons, as described above, but an examination of this literature is beyond the scope of the present thesis.

An alternative standpoint to the localist view is that lexical information is not stored in word specific nodes, but is instead stored as a set of distributed representation with lexical information located in, and shared among the connections themselves (Seidenberg & McClelland, 1989). In this connectionist view, a limited set of units will be used to represent a large number of patterns of activation, which will be responsible for the recognition and comprehension of words (Seidenberg, 2005). Through an intermediate layer of hidden units, along with varying connection weights to regulate activation, partial regularities and other complex aspects of language can be learned and represented in the system. A defect in the semantic system would not produce a full collapsed access to meanings, as it could occur in the localist view, but rather it would result in gradual deterioration of performance in specific tasks. Evidence for this view is found especially in computational modeling simulations of human reading behavior (Harm & Seidenberg, 2004; for a review see Plaut, 2007).

Moving beyond to theories of reading words in sentences, Elman (2009) has proposed an alternative approach to the understanding of lexical knowledge which does not require lexicons. In his view, the richness of lexical knowledge and the high-order syntactic processes that are simultaneously triggered demand an information processing system that has a strong dynamic nature. His arguments are mostly based on studies about how experiment participants react in the presence of ambiguity in sentence processing, as it is this additional complexity of processing words *in context* which leads Elman to suggest that the definition of the lexicon as

a container for localist representations is not feasible. According to the *constraint-based-theory* (Altmann, 1999), all available linguistic information (syntactic, semantic, and pragmatic) as well as other case specific information, such as frequency, event structure, sense-specific usage patterns, properties of the nouns of action, will be used to resolve ambiguity early on during sentence processing. In this sense, the initial parse will be constantly revised in an interactive way to arrive at a final resolution (Marslen-Wilson, 1987). In the face of the resulting combinatory explosion and complexity of such a process, Elman (2009) suggests a model in which the word changes its role from *operand* to *operator*, that is, the knowledge of words lies not in the word itself, but in the system, and the word is just a cue to access meaning. This view could be potentially incorporated within the connectionist framework. Accordingly, the input word will affect the internal state of the knowledge system, whose dynamic structure is sensitive to the word's specificities (e.g., grammatical function, meaning etc.). Thus, when a word enters the system, it causes an alteration in the patterns of activation of the previous state which is initially encoded by the immediate context. This dynamic would give the system the flexibility that it needs to accommodate the complexity and richness of lexical knowledge.

The attentive reader will have noticed that evidence at the word level has been reported for both the localist and the connectionist accounts. This is a reflection of the problem that is intrinsic to the study of processes that are only indirectly observable. Even with the technological advances made to the study of cognitive processes (e.g., EEG, fMRI), there remains a gap between observed behavior, timing, and location of brain signals. Furthermore, although computational modeling has provided insights into human behavior, models based on different architectures claim that they explain the same phenomenon, and thus the evidence from this field is still inconclusive as to the exact nature of lexical information.

At present, there is no piece of evidence that would entirely rule out one of the accounts and evidence at the word level has been reported for both the localist and the connectionist

accounts. In regard to high-order syntactic processes, proponents of both streams are still trying to overcome the technical challenges involved in incorporating these complexities related to semantic knowledge into their computational models (Perry, Ziegler, & Zorzi, 2010). It should further be noted that the idea of localist entries within a lexicon, as well as distributed connectionist models have arisen from research into single word reading whereas the proposal of Elman (2009) comes from research looking at sentence processing. Thus, it may be the case in the future that the two points of view are combined in some unified model which covers all facets of reading.

Ignoring for the moment the exact form of the mental representations of word knowledge, how is it that we are granted **access** to this knowledge? Models of spoken word recognition, such as the *cohort model* (Marslen-Wilson, 1987), describe word knowledge representations in the mental lexicon as a bridge between sounds and meaning. The model considers three basic functions: access, selection, and integration. After hearing a spoken word (phonological input) a process of looking for a compatible representation is triggered and a mapping of the phonemes heard to possible phoneme representations in the mental lexicon takes place. A discrimination process for the best-fit among active candidate units follows and, in parallel, other related word information, such as syntactic and semantic features of activated words will be integrated. Cognitive models of speech production also mention a process of recognizing phonological segments coming from an auditory input and retrieving related lexical concepts from a semantic system (Levelt, Roelofs, & Meyer, 1999).

In similar ways, models of reading words aloud, whether they be lexicon based such as the dual-route cascaded model (Coltheart et al., 2001), or connectionist in nature (e.g., Seidenberg, 2005), assume a process of mapping the grapheme based input to its corresponding phoneme representations and, in parallel, the activation of other word related knowledge, including semantic features. The difference between the two accounts lies mainly in the way in

which the mapping takes place, which is determined by the underlying representations posited by each model.

In the present work, the existence of a mental lexicon for semantic word information which is localist in nature is assumed, because this view of the mental lexicon provides an evidence-based and intuitive framework to derive practical recommendations for the teaching of vocabulary. Nevertheless, it is worth to note that this decision does not change the interpretation of the results of this thesis, as the points made would still be valid if results were viewed from a connectionist standpoint.

Considering this, and considering that the focus of this work lies in the knowledge of word meanings, let us turn our attention to theories that try to explain how semantic word knowledge might be **structure**d in the mental lexicon.

According to Lehrer & Kittay (1992), there is a whole spectrum of theories about the organization of semantic knowledge that extend from one extreme to another. Researchers on one side of the spectrum defend the decomposition of words in a limited number of basic semantic knowledge components which would be common to all words and across most/all languages (Wierzbicka, 1972). These are grouped under the term *atomic globule theories* and derive from the idea of the *universal grammar* by Chomsky (1986). More specifically, there would exist a set of basic atoms of meaning called *semantic primitives* in terms of which all words in the mental lexicon would be represented (Aitchison, 2003; p. 76). That is, each word would be composed of a certain combination of these semantic primitives and words that are related to each other would share semantic primitives forming an overlapping network. Lexicographic works in this area (e.g., Miller & Johnson-Laird, 1976; Schank, 1972; Wierzbicka, 1996) have failed to completely specify a list of primitives, mostly stumbling upon the problems of subjective decisions about the absolute number of primitives necessary to define a word and the level of decomposability of the primitives (Aitchison, 2003).

One implication derived from the idea of semantic primitives is that words which are composed by many primitives would need longer processing times to allow their parts to be put together. Nevertheless, no evidence for an assembling effect has been found (Fodor, Garrett, Walker, & Parkes, 1980; Kintsch 1974).

Despite the fact that the atomic globule theory in its most strict sense is not considered an evidence-based explanation of how word meanings are structured in the lexicon (Aitchison, 2003), its most enthusiastic defenders still work in the hope of being able to define and find proof for the set of universal semantic primitives proposed (e.g., Wierzbicka, 2015).

On the other side of the spectrum we find researchers who reject the idea of the decomposition of semantic word knowledge and argue that all words are treated as whole units in mental representations of knowledge (Fodor, 1987). The idea of words as units containing semantic knowledge is also proposed by the *cobweb theories*, which describe the mental lexicon as an interconnected system with lexical items (words) at the nodes and innumerous paths that link them in a complex network (Aitchison, 2003; p. 84). This network would be organized in *semantic fields*, with stronger or weaker links between words depending on the kind of relationship that exists between them. The concept of semantic fields is based on the classical works by Saussure (1916) and Trier (*Wortfeldtheorie*; 1931) and is still of interest in linguistics (Evans, Levinson, Gaby, & Majid, 2011; Magnini, Strapparava, Pezzulo, & Gliozzo, 2002). A semantic field consists of a set of meaning-form units called *lexemes* (Lehrer & Kittay, 1992). A lexeme can be one word or a composition with more words with a non-compositional meaning (such as in the case of an idiom or phrase).

In order to try to identify how words are grouped together in the proposed semantic fields, experiments based on word association and priming effects were undertaken (Aitchison, 2003). In word association experiments, the word that was first named by participants in response to a presented prime word would be considered to be closely linked. Following this

logic, stronger priming effects would be expected for words that are part of the same semantic field. In support of these assumptions, results of experiments have allowed the identification of four main relation categories or semantic fields (Aitchison, 2003; p. 86). The first and most common association is the *coordinational* relation, which means words that stand in the same level of detail (including antonyms), for example, butterfly/moth. Secondly, *collocational* relations are words that are commonly found together in speech, for example, butterfly/net, and it was found that these words are strongly connected. The third *superordinate* relation corresponds to terms that stand in a kind of hierarchical relation to one another, such as butterfly/insect, in which insect is an overarching term (or hyperonym) for the word butterfly. Lastly, with weaker association rates than the three previously cited, is synonymy – that is, a word with a similar meaning was given as response to the original word stimulus.

However, this theory also is not free of criticism (Aitchison, 2003; p. 85). Basically, it has been argued that the experimental conditions in which the words are named are not considered a natural activity, so results might not be an appropriate indicator of how words are really organized in the mental lexicon. Moreover, additional experiments have shown that the pattern of responses in word association experiments could be influenced by whether the prime words are embedded in context or are presented as standalone words (Lehrer & Kittay, 1992). Presenting the primer word embedded in carrier sentences opens innumerous possibilities of links between units. Consequently, the simplistic experimental condition of presenting the word isolated or in one specific context will not capture or trigger the whole array of possible linkage between words.

An intermediate account between the two extremes, which addresses the issue of how semantic and syntax interact is Jackendoff's *conceptual semantics* (1990). In his view, semantic knowledge would be composed of basic elements of meaning similar to the idea of the semantic primitives and the usage and combination of these elements would be governed by a set of

syntax and context rules. In this theory, the author links semantic to syntactic structures using explicit formal rules expressed in semantic functions and arguments (similar to the generative grammar by Chomsky). As a result, Jackendoff concluded that words which belong to the same semantic field share the same or similar syntax.

Apart from semantic fields, *frames* have also been suggested as an additional form of structuring the mental representation of word knowledge (Barsalou, 1993). According to this author, frames would include schematic representations of our experiences with words in the form of mental models, which in turn would confer a more dynamic and script-like characteristic to the word knowledge mind architecture which is not depicted by the fields (Barsalou, 1992).

The presumption of word knowledge structured in fields and frames implies that understanding the meaning of a word will depend in part on its relation to other words as well as on the experiences and background knowledge acquired through our perception of the world (Lehrer & Kittay, 1992).

In sum, there is still no current universally agreed upon theory regarding how semantic knowledge is structured. Researchers still look for evidence that could clarify its structure and functional processes and possibly rule out competing theoretical explanations. Nevertheless, despite ongoing debate on the nature of semantic knowledge, theoretical models about the mental lexicon share the view that vocabulary means some form of mental representation, as units or patterns of activation, of word knowledge, and a rich combination of linguistic knowledge will be activated and need to be integrated to allow words to be correctly produced, read, and understood. Additionally, researchers do agree that words are linked in very complex ways and that their semantic boundaries are not clear cut and will be influenced by rules of syntax and the context in which the word is encountered.

As the ultimate goal of this work is to develop a vocabulary training for children, a relevant question at this point is how these theories relate to practice. The assumption of an organized semantic lexicon with fields and frames, which allow possible relations between semantic components and their interaction with grammar rules and context, could have three basic implications for the teaching of vocabulary. One possibility is that by teaching one word, knowledge of other words which share semantic primitives or are grouped in the same semantic field could be potentially activated and refined. That is to say, an organized network structure of word knowledge would potentially enable learning transfer effects to take place. A second possibility is that presenting words in a structured manner (e.g., semantic maps) or in context (especially a personally relevant experienced context) could be more adequate to support the word learning process and foster the integration of the new knowledge to already existing knowledge structures. Lastly, teaching grammatical aspects of word knowledge, such as syntax and morphology, could indirectly promote vocabulary development.

In addition to these cognitive aspects of word knowledge, understanding it at the developmental level is equally important in order to design vocabulary training concepts. Thus, in the next section, the questions pursued are how vocabulary knowledge develops in children and what the necessary abilities are for children to learn words.

2.1.2. Vocabulary development

Although statistical estimation of the number of words people know at different ages and the pace at which vocabulary knowledge grows varies from study to study, the numbers are nevertheless impressive (Stahl & Nagy, 2012, p. 29). At school entry, around six years old, children will already know about 8,000 words (Senechal & Cornell, 1993) and this number grows to 40,000 at the end of high school (Nagy & Herman, 1987). Finally, it is estimated that a university educated adult will know 150,000 words, on average, even though they might only

use a third of these in daily life conversations (Aitchison, 2003, p.6). It should also be noted that vocabulary growth is not always linear and some children (13-18%) will experience an explosion in word acquisition, known as the *vocabulary spurt*, which may occur at around 16 months of age (Ganger & Brent, 2004). Some authors argue that an acceleration in vocabulary acquisition could also take place in the elementary school years (Bloom, 2004; Justicia, 1995). After children learn to read, they will be exposed to a large number of new words through reading activities, and this could affect their word learning rates (for a discussion on vocabulary spurt see Bloom, 2004; Ganger & Brent, 2004).

So, what makes this amazing phenomenon of word learning possible? In the beginning of the word learning process children face two main challenges (Echols & Marti, 2004). The first refers to the mechanisms which allow, or facilitate, the identification of words as single units in the stream of speech. The second alludes to the processes involved in associating a word to a world referent or meaning. From a developmental perspective, the generally accepted view is that the pre-linguistic child (0 to 12 months approximately) possesses certain general perceptual and attentional tendencies, which will later be shaped and expanded by characteristics of the language as well as by the social environment to which the child has been exposed. More specifically, results of studies about word identification in speech show that infants can recognize acoustic cues for word boundaries very early in their first year of life (Kuhl, 1987), but the ability to use them will depend on considerable exposure to the native language, whose characteristics will shape cognitive tendencies (Saffran, Aslin, & Newport, 1996).

The first mental representations of words will be built upon the perception of salient parts of speech determined by aspects of prosody, such as stress, rhythm, intonation, and position in speech sequence (Echols & Marti, 2004). Studies on early language production point to a tendency to initially imitate final and stressed syllables (Hura & Echols, 1996); for example,

'Sofia' will be produced as 'Fia.' This is supported by evidence from perception studies, in which infants were found to look longer for changes in final syllables compared to non-final syllables (Jusczyk & Aslin, 1995).

Additionally, when non-stressed syllables were incorporated into the initial mental representation of the word, infants were inclined to fill these either with a repetition of the initial stressed syllable (e.g., 'nuni' for noisy or 'bobi' for bunny) or with a default segment, called *schwa sound* (e.g., 'uh-meh-meh' for remember) (Echols, 1993). This inaccurate representation of unstressed syllables was interpreted as a rhythmic place holder, which could be replaced by more specific information in the course of learning and development.

Through the exposure to a native language, initial sensitivity will be shaped to incorporate more language-specific cues, in a process similar to the loss of sensitivity to discriminate vowel and consonant sounds not pertaining to the environment language (Kuhl, Williams, Lacerda, Stevens, & Lindblom, 1992). Studies show that between six and twelve months of age, infants can additionally use phonotactic knowledge (allowed consonant sequences in a particular language) to recognize word boundaries (e.g., Friederici & Wessels, 1993), and by ten and a half months, there appears to be a change, in that phonetic cues will be preferred over prosodic cues in segmenting words (Myers et al., 1996). The frequency of certain words in the language can also support word segmentation. For example, functional words (e.g., a, the) are very frequent in English and there is evidence showing that 11-month-old infants are aware of functors, probably perceived as pauses, and use them for word segmentation (Shafer, Shucard, Shucard, & Gerken, 1998).

Now turning to the second challenge which children face – the fact that there are no rules upon which children can rely on in order to match a learned label to a world referent. How is it that children can master this task? There are four main theories that try to explain how children link words and their meanings: *internal constraints*, *generalist*, *social-pragmatic*, and

emergentist coalitional (Hirsh-Pasek, Golinkoff, Hennon, & Maguire, 2004). The first three theoretical views defend single aspects of word learning. In contrast, defenders of the latter theory plead for a more integrated and dynamic framework that combines the former three aspects and allows them to contribute differently as children develop.

The internal constraints theory is based on the classical work by Quine (1960), in which the author poses the problem of matching a label to a certain referent in the world in the presence of the enormous amount of possibilities. Assuming that the great majority of the readers of this thesis will not be familiar with the South-American native Indian language Tupi, the reader is invited to put him/herself in the shoes of a foreigner immersed in a language of which he/she has no knowledge. For example, imagine you are in Brazil somewhere away from the big cities, sitting on a veranda beside a local person. In front of you, there is a wonderful jungle landscape with trees, flowers, stones, plants, insects, birds, and small animals (frogs, snakes etc). The air smells like wet green grass and you can feel how the sun shining on your arms warms up your skin. All of a sudden, the person points in the direction of this rich landscape and says: "mboîa!" Which of the numerous present referents would you first connect to this label? Would it concern a feature of the whole landscape, such as "green" or "beautiful"? Would it relate to a certain element, such as a stone, a specific tree, one of the animals, or the birds that passed by flying? Or would it refer to a bird's singing or color etc.? This is indeed a hard question.[3]

According to the constraints view, in order to match a label to an object, action or attribute, the mind of the child needs a cognitive mechanism that imposes a bias for perception and attention. These so-called internal constraints are believed to be innate and allow a reduction of the possible matches by directing the child's attention first to specific aspects of the stimuli (Markman, 1989).

[3] 'mboîa' means snake in the native Indian language Tupi (source: http://tupi.fflch.usp.br/node/5).

There are six main constraints which are supported by experimental evidence: *reference* (word refers to objects, actions, and attributes), *extendability* (word refers to more than one original referent, in the sense of a category label), *object scope* (word refers to whole objects and not parts, and objects will be named over action), *conventionality* (use socially agreed-on names), *categorical scope* (extend labels based on category, not perceptual similarity), and *novel name-nameless category* (novel names refer to nameless categories) (Golinkoff, Mervis, & Hirsh-Pasek, 1994). These six principles of lexical learning are believed to emerge as children develop and gather word-learning experiences. Golinkoff et al. (1994) proposed a division of these six fundamental principles of word learning into two tiers, whereby the first tier includes the first three constraints and would appear around 12 months of age. The second tier containing the remaining three constraints would derive from the first set of constraints, and would support children in developing more mature word learning strategies. They argue that it is the emergence of these additional word learning strategies that would underlie the vocabulary spurt experienced by some children.

In contrast, the second theory, called generalist, posits that such constraints are not necessary, as a set of general attentional mechanisms, such as perceptual saliency, association, and frequency would be sufficient for solving the word-to-meaning association task (Smith, 1999). Accordingly, children would attach the most frequent label to the most salient object, event, or action perceived from the environment.

A change in focus from cognitive learning processes to social aspects of language learning is proposed by the third account. According to the social-pragmatic cues theory, children are guided by experienced word learners, who will have a good guess about what the child is focusing on and, consequently, will provide an appropriate label for it (Akhtar & Tomasello, 2000). This is in agreement with the large body of studies that describe the positive effects of the interaction between the child and the main caregiver for language development

(Saint-Georges et al., 2013). The special kind of speech that will instinctively be used by the main caregiver when talking with the infants, so called *motherese* or infant-directed speech, is characterized by simple sentences, exaggerated intonation, high pitch tones, and repetition (Snow, 1972; Stern, Spieker, Barnett, & MacKain, 1983). These special prosodic and interaction characteristics were found to support children's language learning (Saint-Georges et al., 2013).

Proponents of the last account, the emergentist coalition model, attempt to unite the above views in a dynamic model which allows for the different cues and strategies to emerge as children accumulate experiences with words (Hollich, Hirsh-Pasek, & Golinkoff, 2000). The model is based on three main principals: (1) children utilize a combination of cues for word learning (general learning mechanisms, constraints, and social cues); (2) the importance and utilization of cues can change in the course of the child's development; and (3) word learning principles are not innate, but rather will rise from experience. In the beginning, when associating words to objects, actions, or events, the child is governed by general attentional mechanisms, such as perceptual saliency and temporal contiguity. Then, gradually the child will start making use of language-specific and social cues and these will eventually gain more importance for word learning.

In sum, learning words is a challenging task. The child is required to develop competencies in many areas, including prosodic (intonation, rhythmic arrangement, stress), linguistic (phonology, morphology, semantics, syntax), and social (pragmatic, cultural rules) (Grimm & Weinert, 2002). The prosodic and linguistic competencies will be acquired implicitly, given that it is usually not until the age of six that children start to explicitly learn about the rules of the language through formal schooling. The re-organization of language due to the explicit learning of language rules is reflected in the sudden and unexpected occurrence of mistakes (e.g., over application of the past tense rule to form 'goed' instead of 'went') that

contradicts previous performance or knowledge. At around eight years of age, the conscious reflection about language and understanding of language at a meta-cognitive level is expected to develop. The social competencies, including pragmatic and socio-cultural rules of interaction in conversation, seem to become more prominent with increased opportunities and complexity of social interactions as children grow older.

2.2. What is a word?

> *"A single word even may be a spark of inextinguishable thought."* (*A Defense of Poetry by P.B.Shelley*, 1821)

As this work is focused on teaching children words, this section will begin with a definition of what a word is. Once more starting with a general definition from the online Oxford Dictionary, a *word* is "a single distinct meaningful element of speech or writing, used with others (or sometimes alone) to form a sentence and typically shown with a space on either side when written or printed." In other terms, a word is a language unit. These units can be seen as building blocks, which can be combined to produce coherent messages in oral or written form.

Words can differ in a number of factors, such as frequency of appearance in language (written or oral), length, complexity of syllabic structure, imageability, concreteness, age of acquisition, among others. These word characteristics have been found to influence word processing (Soares, Costa, Machado, Comesaña, & Oliveira, 2017) and, therefore, controlling for these factors when using words in experiments is recommended.

2.2.1. Dimensions of word knowledge

There are two terms that are commonly found in the literature to describe word knowledge: *breadth* and *depth*. Although there is no universally agreed definition for these terms, and one will find them being used in slight different ways, breadth of vocabulary knowledge conventionally represents the size or overall number of words in one's vocabulary, independent of how superficial the knowledge about each word is (Nagy & Hermann, 1987). Depth is usually used to reflect the richness and extent of knowledge one possesses about the words. This notion that word knowledge is not dichotomous (know /don't know a word), but

rather incremental with different levels of depth is recognized in all theoretical accounts about word knowledge that will be presented next.

In one of the earliest contributions, Cronbach (1942) derived five qualitative word knowledge characteristics from students' behaviors when encountering a word. These can be divided in terms of word knowledge extent and usage.

Regarding the extent of word knowledge, the first behavior would be the ability to define a word, which he called *generalization* of word knowledge. This characteristic is usually measured by asking students to define a word orally. However, Cronbach (1942) cautions that the reliability of this measure will depend on the child's oral expression ability. The second behavior related to knowledge extent would be the ability of the student to recall different meanings depending on context, in his words, the *breadth* of word knowledge.

The ability of the student to use acquired word knowledge is reflected in the remaining three qualitative characteristics. The first behavior is denominated the *application* of word knowledge and would correspond to the ability of the student to correctly select a situation to which a word fits. This is usually measured by asking the student to select out of a set of illustrations the one illustration that best fits to the word or to name a picture with the best fitting word. The *availability* of word knowledge is the second behavior, which would refer to the actual use of the word in thinking and discourse. Lastly, the level of *precision* or correctness when using the word in a variety of situations would be the most important aspect of vocabulary knowledge for diagnostic testing.

Some authors have tried to describe word knowledge in terms of level of growth in a continuum. In Dale's account (1965), there are basically four stages of word knowledge. In the first stage, no knowledge of the referred word is given ("I have never heard this word before."). Then, in stage two, word knowledge would move on to a kind of knowledge that implies only

a label with no meaning attached to it ("I have heard of this word, but I don't know what it means."). Next, in stage three, some context-bound and superficial word knowledge would be present ("It has something to do with...;" word is recognized when presented in a context). And lastly, in stage four, a deeper and less context-bound knowledge of the word's meaning would have been achieved ("I know what it means."). Beyond this stage word knowledge could still grow in precision.

Beck and colleagues (Beck, McKeown, & Omanson, 1987) undertook a similar approach and suggested that the knowledge about a word would start at point zero with no knowledge at all. Then, it would move along to a general sense of the word, for example, knowing about a word's positive or negative connotation. This general knowledge would be further developed to a narrow, context-bound knowledge, and then extended to a greater knowledge, but which would still not allow a prompt recall of word knowledge when necessary. Further along, a richer decontextualized knowledge would be achieved. This rich word knowledge would comprise not only the fast recall ability, but also the word's relation to other words and its metaphorical use.

This richness of word knowledge is in accordance with Perfetti's *Lexical Quality Hypothesis* (2007) which poses that word knowledge is composed by word forms (syntax, morphology, orthography, and phonology) and word meanings (semantic). These components are combined in so called *word identities.* Through experience with words, the knowledge components in the word identities become more integrated and stable and, as a consequence, a reliable retrieval of a word entry and a synchronized activation of all its related knowledge will be facilitated. Perfetti (2007) argues that it is the quality of the word identities that would determine the extent to which word knowledge will support higher-order processes in reading comprehension.

The complexity of word knowledge becomes even more apparent in Nagy and Scott's (2000) description of word knowledge. Apart from acknowledging the incremental nature of word knowledge acquisition and word polysemy (multiple, unrelated meanings, such as river *bank* and investment *bank*), as in the previous accounts, these authors call attention to the interdependence of word knowledge (called *interrelatedness*). As knowledge within word (as per the concept of word identity), and between words (as per theories of semantic primitives, fields, and frames) is connected in a complex network, learning one word might be influenced by the knowledge one has of other related words. This networked character of word knowledge might confer its potential to allow for learning transfer effects for related items not directly encountered in the experiences with words in conversation and text. In accordance, Graves (1986) posits that teaching of vocabulary will depend on the novelty of items and meanings. In this sense, specific tasks would be required depending on whether the goals are to learn new meanings for known words, learn new words for known concepts, learn new words for new concepts, or to deepen or enrich the meaning of already known words and concepts.

In sum, the previously presented theoretical approaches defend the idea that vocabulary knowledge is not dichotomous. Therefore, when measuring children's vocabulary and designing intervention programs, not only the number of words is important (breadth), but also the qualitative characteristics of word knowledge, such as its components, richness, structure, and relation to other knowledge should be taken into account.

In addition, in order to develop evidence-based interventions, a model that depicts vocabulary knowledge at different levels of explanation is needed (Snowling & Hulme, 2011). The basic notation framework suggested by Frith (1995) for dyslexia was used to create a multidimensional model to guide the development of vocabulary assessment tools and training for this work (Figure 1). In accordance with ecological theories of development (e.g., Bronfenbrenner, 1977), the environmental factors related to vocabulary, such as SES and social

interaction, influence both the cognitive and behavioral levels in a reciprocal and continuous interaction in the course of development. The cognitive level contains the non-directly observable hypothesized structures and processes that are assumed to underlie the directly observed behavior, which in the case of vocabulary would be the actual use of words in oral and written language.

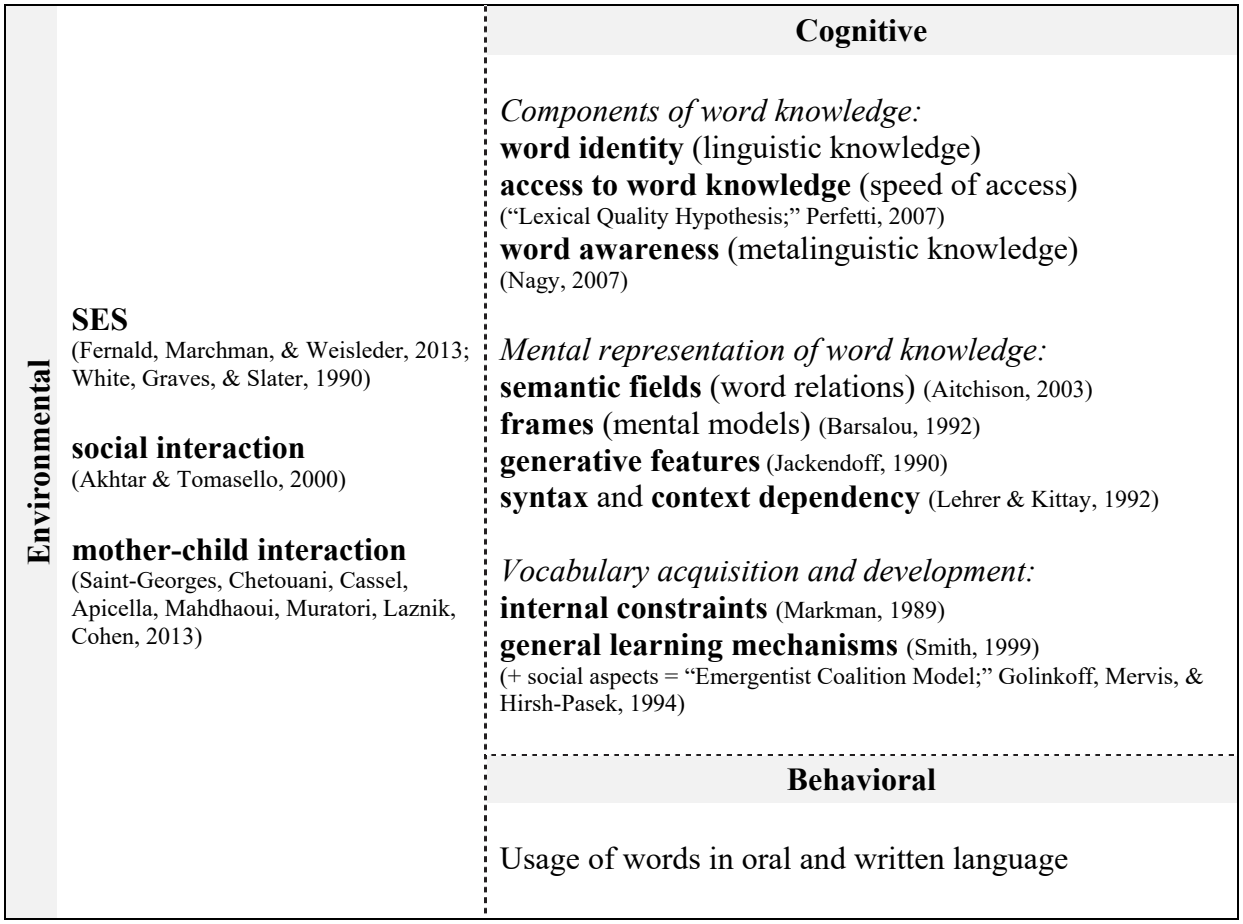

Figure 1. Multidimensional theoretical model of vocabulary (based on Frith, 1995).

2.3. Factors related to vocabulary knowledge

"Reading skills of children correlate with their shoe size. (...) Ice cream sales correlate with deaths by drowning. (...) conditioning on a collider." (Statistics blog by Julia Rohrer, 2017)

2.3.1. Vocabulary and reading abilities

Vocabulary knowledge has been recognized as an important aspect in learning to read (NICHD, 2000; Snow, 2002). As mentioned in the introduction, high correlations between vocabulary and **reading comprehension** have been repeatedly reported in the literature for English-speaking populations (Anderson & Freebody, 1981; Baumann, 2009). In Spanish, a similar importance of vocabulary knowledge for reading comprehension abilities has been reported (Canet-Juric, Urquijo, & Burin, 2009; Silva, Verhoeven, & van Leeuwe, 2011).

Nevertheless, the nature of the relationship between the two is still in debate, as various vocabulary intervention studies show that, in most cases, large effects on knowledge of taught words are not reflected in the measures of reading comprehension (see meta-analysis by Elleman et al., 2009). Also correlational studies have indicated that even when children were matched for knowledge of word meaning, they nevertheless performed differently in standardized tests of reading comprehension (e.g., Cain, Oakhill, & Lemmon, 2004).

There are basically four hypotheses that have been put forward to try to explain the relationship between vocabulary knowledge and reading comprehension (Baumann, 2009). The first three views were formulated by Anderson and Freebody (1981) after they undertook a comprehensive review regarding the role of knowledge of word meanings in reading comprehension. The *instrumentalist* hypothesis is straight forward and posits a direct causal relationship between vocabulary and reading comprehension. This would imply that any changes in vocabulary knowledge should automatically promote similar changes in reading comprehension. Their second hypothesis proposes vocabulary knowledge as one factor of a

person's *verbal aptitude* and it is this more general verbal ability that would be responsible for performance in reading comprehension (Anderson & Freebody, 1981). Nagy (2007) adds to this view and argues that one important dimension of the verbal aptitude which would influence the relationship between vocabulary and reading comprehension is *metalinguistic awareness*. He defines the term as the ability to reflect on and manipulate the structural features of language. In the context of vocabulary, *word awareness* is referred to as "interest in and awareness of words" (Stahl & Nagy, 2012, p. 137). This concept is of special importance, as, theoretically, it has the potential to lead to learning transfer effects. If children can be trained to think differently about words and be more attentive to words in their environment, this could positively affect their word learning experiences in general. Finally, Anderson and Freebody's (1981) third hypothesis states that *knowledge* of the world and culture is essential for text understanding. In this sense, vocabulary would be a part of a broader background knowledge and only indirectly correlated to reading comprehension. In this view, the importance of vocabulary for reading comprehension would not be related to knowing meaning of isolated words, but to the whole knowledge concept that is formed around it. According to Barsalou (2012), word meanings and conceptual knowledge are not the same, but they will influence each other in the process of construction of background knowledge.

The fourth and last hypothesis formulated by Mezynski (1983) is based on the idea of the importance of automaticity or fluency for reading (Perfetti, 1985). In Mezynski's view, the *speed of access* to word meaning is the linking factor between vocabulary and reading comprehension. This means that the efficiency with which word knowledge can be accessed would directly influence reading comprehension performance.

As in most cases of complex cognitive phenomena, the accepted view after many years of investigation is that all of the above hypotheses are to a certain degree correct and will be more or less able to explain the relationship between vocabulary and reading comprehension,

depending on the circumstances (Anderson & Freebody, 1981; Baumann, 2009). Also, the relationship is thought to be reciprocal, that is, vocabulary size and reading comprehension skill will influence each other in the course of development (Verhoeven, van Leeuwe, & Vermeer, 2011).

One theoretical account that integrates some of the above mentioned hypotheses is Kintsch's *Construction-Integration-Model* (1988). According to this framework, the comprehension of text would undergo several processing levels and different aspects of word knowledge would be incorporated and used at each of these levels (Kintsch & Rawson, 2007). In the first levels, linguistic aspects of word knowledge, such as phonology, orthography, syntax, and semantics (at the isolated word level), would be activated. In higher-order levels, this information would be combined with background knowledge (including images, emotions, and personal experiences) into more elaborated mental representations or *situation models*. Consequently, it could be argued that the relationship between vocabulary knowledge and reading comprehension would change at the different levels of processing. In this sense, at the beginning of the process, a more direct influence of vocabulary could be implied, as the knowledge of each word meaning and other linguistic aspects would be called for. At the same time, for high-order processes a more indirect influence of vocabulary, dependent on background knowledge, could be more prominent.

Another integrative view that has received attention is Perfetti's comprehensive framework about the components involved in reading comprehension (Perfetti et al., 2007). This model captures not only the influence of linguistic information (word meanings) and general background knowledge, as posed by the instrumentalist and knowledge hypotheses, but additionally integrates the speed of access hypothesis. It explicitly argues that the fast access to word knowledge enabled by high-quality word identities has an especially supportive effect for higher-order comprehension processes, in the sense that a rapid and less effortful word

knowledge access could potentially mean more cognitive resources available for higher-order processing, such as inferencing, building coherence, and monitoring comprehension. This could mean that the speed of access to the stored vocabulary knowledge, be it linguistic or background knowledge related, would assume a moderating role in the relationship between vocabulary and reading comprehension.

Vocabulary is also considered in the *Simple View of Reading* theory (Hoover & Gough, 1990), which posits that reading consists of two main components, namely decoding and linguistic comprehension. Within this idea, vocabulary is considered a factor belonging to linguistic comprehension. Although linguistic comprehension is a complex process, in simple terms it can be described as the ability to use lexical information in written or oral form to build comprehension of text passages or discourse. There is evidence that supports vocabulary knowledge as being a factor belonging to general language comprehension abilities (Braze et al., 2016; Tunmer & Chapman, 2012).

The assumption that the comprehension of oral and written language share some common processes (Gernsbacher, Varner, & Faust, 1990; Gough & Tunmer, 1986) has raised further questions about how these processes are related and may support each other in the course of development. According to Gough, Juel, and Griffith (1992), the role of oral language comprehension for reading comprehension grows as children advance in school. In a longitudinal study by Catts, Hogan, and Adlof (2005), listening comprehension accounted for 9%, 21% and 36% of variance in reading comprehension in second, fourth, and eighth grades, respectively. Additionally, Storch and Whiteburst (2002) found that reading comprehension in later elementary school was significantly influenced by children's oral language skills in pre-school. In accordance, there is evidence showing that training in oral language abilities can have a positive effect on children with reading comprehension difficulties (e.g., Clarke et al., 2010).

Specific to vocabulary, Ouellette (2006) examined the relationship between oral vocabulary knowledge and different reading abilities. In this study, oral vocabulary was broken down into different levels of knowledge and these were operationalized using measures of receptive vocabulary breadth (from a set of four pictures, point to the picture that best represents the word), expressive vocabulary breadth (name pictures of verbs and nouns), and expressive vocabulary depth (orally define word). Results showed that receptive vocabulary breadth was the only significant predictor of decoding performance, whereas expressive vocabulary depth contributed to explaining significant variation in reading comprehension beyond the measures of vocabulary breadth. Ouellette concluded that the semantic component of oral vocabulary knowledge would be more important for reading comprehension than for reading factors that are strongly phonologically related, such as decoding.

Theoretically, the processes involved in **decoding** may or may not involve the activation of semantic information at the word level (Hoover & Gough, 1990). Decoding is defined as converting print to speech, and includes knowledge of grapheme-to-phoneme correspondence mappings, as well as the ability to recognize words as whole units (Hoover & Gough, 1990). The relation between decoding and breadth of vocabulary could be interpreted in terms of refinement of phonological representations (Ouellette, 2006). This means that as more and more words are learned and incorporated into the mental lexicon, a finer phonological representation would be developed to enable more precise differentiation between entries.

Similarly, Ziegler and Goswami (2005) explain the relationship between vocabulary and decoding as an effect of knowledge organization and integration. In this sense, as the number of word entries in the mental lexicon grows (breadth of vocabulary), groups of similar sounding representations emerge. This more integrated knowledge would facilitate the retrieval of word information when reading aloud. Nation and Snowling (2004) have also argued that having a richer vocabulary would facilitate deciphering not only a word's meaning, but also its

phonological representation in context. Nevertheless, when assessing the contribution of vocabulary to decoding in more comprehensive models of reading that embeds a group of reading skills and other cognitive variables, such as IQ or working memory, this relation is not always robust enough to remain significant (e.g., Ricketts et al., 2007). New evidence from English suggests that the role of word knowledge in word reading is also complex and could be influenced by the characteristics of words, such as in the case of regular and exception words (Ricketts et al., 2016).

In a related argument, some authors claim that the transparency of the language might influence how much vocabulary knowledge is supportive to the development of reading comprehension and decoding abilities (Verhoeven et al., 2011). In this sense, in a high transparent language (and likewise for rather regular words) vocabulary knowledge would be less important to decoding processes in comparison to reading comprehension skills.

In Spanish, preliminary analysis using data from this study in a multivariate model controlling for non-verbal IQ and working memory supported this idea (*in preparation*). The results showed a small but significant correlation between decoding and oral vocabulary knowledge, while the relationship to reading comprehension was highly robust. In contrast, in a longitudinal study by Kim and Pallace (2012) with high-SES children from Chile, vocabulary was found to be a significant predictor for reading comprehension, but not for decoding related skills. These inconsistent findings indicate that further research is still needed to clarify in which circumstances a correlation between vocabulary knowledge and word reading is present and, also, how this relationship varies depending on the characteristics of the word and the language.

2.3.2. Vocabulary and socio-economic status

Resilient students are defined as the ones who "beat the socio-economic odds stacked against them and exceed expectations" (OECD, 2012; p. 3). According to an OECD report (2015; p. 216), although the proportion of resilient students in Spain have been increasing, around 12% of variance in reading performance is still linked to socio-economic differences.

In regard to vocabulary, various studies have shown that children from low SES are affected by persistent vocabulary deficits (Biemiller & Boote, 2006; Hart & Risley, 1995; Hart & Risley, 2003; Marulis & Neuman, 2010). This will subsequently bring extra burdens to these students' already challenging educational path (Fernald et al., 2013; White et al, 1990). This is also the case in Spanish, as it has been reported that the difference in vocabulary levels between low and middle/high SES children is present and remains throughout the elementary school years (Justicia, 1995). Additionally, a study with Peruvian fourth-graders has shown that reading literacy was significantly correlated to children's SES and vocabulary knowledge levels (Silva, Verhoeven, & van Leeuwe, 2008).

It is important to say that it is not the SES per se that influences negatively children's language development, but the many factors that have been found to be associated with economically disadvantaged families, such as poverty (Hair et al., 2015), children's access to education, parental education, and home environment (parents' support and quality of interaction). In support of this, Perfetti et al. (2007) argued that pre-school attendance and home literacy environment can influence children's vocabulary knowledge. In the same way, also Krashen and Lee Brown (2005) have claimed that the reading performance of students from low SES can be positively affected by improving children's print environment.

In relation to school attendance and the power of schools in diminishing the gaps related to low SES, it has been reported that some educational centers are more effective than others in this regard (OECD, 2015; p. 227), although there is little evidence about the underlying factors.

In a talk organized by the *American Educational Research Association* (AERA) in 2017, educational researcher Charles Payne, from the University of Chicago, mentioned how the power of schooling has been underestimated in relation to what it could do for disadvantaged students. Based on various experiments done in schools in the New York area between 2008 and 2013, he pointed to three main aspects that seem to make the difference: academic rigor, personalization (strong student-teacher relations), and community involvement (learning in as well as outside of the schools). Unfortunately, he argued, practitioners, researchers, and politicians have been ignoring this issue and have not been making enough effort to support the generation of more evidence that could lead to a more equalized public educational system.

Another important factor strongly associated to SES is maternal education (Bornstein, Hahn, Suwalsky, & Haynes, 2003). As mothers still more often take the main role for child-rearing and spend more time with the children in the first years of life, maternal education and mother-child interaction have strong impacts in children's language and vocabulary development. More specifically, Hoff (2013) found that differences in maternal speech (number and type of words and length of utterances) between mid- and high-SES mothers influenced children's vocabulary development. Thus, apart from income, questionnaires for assessing SES should include items to inquire about the child's home literacy environment and about the mother's educational level, as these are relevant predictors of children's vocabulary knowledge.

2.4. Fostering vocabulary development

Research examining vocabulary instruction methods with English-speaking children has a long tradition and an extensive body of evidence has been gathered over many years. As such, several investigators have attempted to summarize the results of this research in order to create a clearer picture about the methods which have proven to be most effective in teaching children words. The following section presents a summary of these findings.

2.4.1. Evidence-based effective interventions

The first summary regarding the effects of vocabulary instruction using a meta-analysis technique was performed by Stahl and Fairbanks (1986). They reported that teaching methods using definitional or contextual emphasis produced large effects and were similarly effective in teaching the meanings of target words and in using the words correctly in *cloze*-type sentences (sentences in which the target word is left blank for the student to complete; Taylor, 1953). For comprehension of text passages containing the trained words, a small advantage for a combination of both definitional and contextual methods was found. Learning transfer effects captured by standardized measures of vocabulary and reading comprehension not containing the taught words were, in general, small.

In a more recent meta-analysis, similar results were reported. Accordingly, vocabulary instruction was found to have a larger impact on customized rather than on standardized measures of vocabulary and reading comprehension (Elleman et al., 2009). The mean effect size[4] found for knowledge of taught words was Cohen's $d = 0.79$, in comparison to a small to medium effect on the standardized vocabulary measures (0.29). The same pattern occurred for reading comprehension, in which a small non-significant effect size (0.10) was found for

[4] The suggested interpretation of Cohen's *d* effect sizes is small = .20, medium = .50, large = .80 (Cohen, 1988), although the importance and practical relevance of these effect sizes in a study will depend on the context and field of research.

standardized measures, against an effect size of 0.50 for customized measures using passages containing the taught words. The authors concluded that the existing standardized measures of reading comprehension are not sensitive enough to capture changes related to vocabulary training. At the same time, they suggested that considering standardized measures as the most important measure of the general benefits of an intervention is not the best way to assess the effectiveness of vocabulary instruction. If children can use the knowledge of words acquired to better understand text containing these words, then the intervention would be worth pursuing. Additionally, results suggest that direct instruction of vocabulary is especially beneficial for children with reading difficulties. In relation to specific instructional methodologies, Elleman et al. recommended a high level of discussion about and around words.

An important systematic review of vocabulary instruction was given in the already mentioned National Reading Panel (NICHD, 2000). Based on analysis of data trends, some of the recommendations for vocabulary teaching practices were: (a) teach vocabulary indirectly and directly; (b) provide repetition and multiple exposures to words; (c) provide rich contexts for words; (d) actively engage children in tasks; (e) combine teaching methods. Similarly, the relatively new research synthesis developed by the National Reading Technical Assistance Center (Butler et al., 2010) advocates for frequent exposure to words, explicit instruction, and engaging and interactive activities.

Apart from the meta-analysis and systematic reviews cited, results of the several single sample studies investigating the effects of teaching methods for promoting vocabulary development suggest a variety of methods of intentional instruction with positive effects for teaching individual words to English-speaking children. Following, the main studies that have strongly influenced the present work and which are considered examples of well-designed and evidence-based interventions will be described.

The **first** study by Nash and Snowling (2006) compared the effects of a definitional versus a contextual teaching approach for 7-8-year-olds with poor vocabulary knowledge. The "definition program" consisted basically of reading aloud pre-determined, simplified dictionary definitions and asking children to think of a personal experience in which the word would fit. The "context program" consisted of presenting the word of the day in a short text passage. Children were asked to find words that "would give clues to the meaning of the new word" and write them down in a semantic map. Similarly to the definition method, at the end of the context program children were also asked to think of a personal experience in which the words would fit. Both groups significantly improved their knowledge of the taught words. Nevertheless, only the context group maintained the gained word knowledge three months later as measured by improved comprehension of passages containing the words. Nash and Snowling (2006) concluded that the semantic representations built through the context method were more persistent, well-specified, and stable. Due to its potential to teach children how to independently find out the meaning of words beyond the teaching program, the contextual method was recommended over the definitional.

One could argue that the *semantic mapping* technique used in this study had facilitated the adequate construction of knowledge structures and its integration to already existing knowledge structures. Semantic mapping is a graphic technique with which knowledge can be presented in visual form (Johnson et al., 1986). It is derived from schemata theories of knowledge which basically posits that our knowledge is stored in organized, structured units (Rumelhart, 1980). The positive effects of this teaching technique to foster word learning have also been reported in other studies (e.g., Margosein, Pascarella, & Pflaum, 1982). In addition, according to the theory of *spreading activation* (Anderson, 1983), a well-organized word knowledge with high-density links between units would also facilitate the activation of related knowledge. This would enable strengthening pathways and improving representations of related concepts, for example, not directly taught in an intervention.

In contrast to Nash & Snowling (2006), Jenkins, Matlock and Slocum (1989) found that a definitional method was more effective to teach children word meanings compared to a contextual method. In this study, the definition method was "richer", as in addition to the direct word definitions, it provided two examples for each target word in sentences. In this case, the provision of a student-friendly context to the words could have boosted the effects of the definition methodology.

These conflicting results suggest that, despite these studies both looking at "definitional" and "contextual" methods, there were probably some important underlying differences in how these methods were implemented. Indeed, Beck and McKeown (1996) alert to the problem with attaching specific labels to training methods, such that under the same name very different teaching concepts can be found.

This can also be seen in the **second** work to be reviewed, that of Beck, McKeown and Kucan (2002). In their concept called "rich vocabulary instruction," teaching word definitions involves repeated exposure to words in different contexts, deep processing of word meanings, and retrieval practices. The word definitions were described as "student-friendly", that is, specially modified to be focused and easily understandable to the students, and embedded in anchor sentences. This type of rich instruction has repeatedly shown positive effects on the knowledge of taught words (Beck, Perfetti, & McKeown, 1982), as well as transfer learning effects on control words and reading comprehension of passages containing the words (Beck & McKeown, 2007; Fawcett & Nicholson, 1991; McKeown, Beck, Omanson, & Perfetti, 1983; McKeown, Beck, Omanson, & Pople, 1985). Thus, when concluding that one type of method is better than another, it is important to attend to the detailed description under the method's label. This will allow a more precise interpretation of the effects of the referred methodology in relation to the learning outcomes.

Definition interventions can also involve teaching the concepts of synonyms and antonyms (Graves et al., 2004). Specifically, the ability to generate synonyms and antonyms is related to verbal reasoning, which is a dimension of verbal comprehension abilities in intelligence tests (Lohman, 2000). The dictionary can be an adequate source for searching for synonyms and antonyms and be used as an external strategy to find out meaning of unknown words (Graves, 2006). One important point to consider is the level of the dictionary, which should match age or students' abilities.

An additional component of the rich instruction designed by Beck et al. (2002) was to indirectly foster word awareness by including activities aimed at motivating children to use the taught words beyond the classroom**.** Basically, children were asked to bring some sort of evidence they had heard, seen, or used the trained words outside the classroom. For each example they got a mark in a chart and when the chart was full children were awarded with certificates and received the title of "word wizard." This extra component was particularly useful in bringing about significant improvements in story comprehension (McKeown et al., 1985).

However, evidence about the effects of word awareness on vocabulary knowledge and reading comprehension in controlled settings is still scarce and more studies are needed to understand the mechanisms regarding how this metalinguistic knowledge specific to words affects word learning and reading comprehension (Elleman et al., 2009). Tentative teaching recommendations for word awareness involve activities to make children more aware of the value and power of words, as well as of polysemy and word parts (morphology) (Graves, 2006; Stahl & Nagy, 2012). In addition, children should be encouraged to use the new words learned outside of the classroom (as in the activity "word wizard" by Beck et al., 2002) and learn how different words are used in different contexts (e.g., written vs oral, newspaper vs blog vs mobile messaging system; conversation with adults vs with same-age friends). Finally, children should

learn to appreciate playing with words, using for example, homophones, homographs, idioms, onomastics etc (Stahl & Nagy, 2012; Graves, 2006).

The **third** and last study refers to oral vocabulary instruction as part of a broader oral language training. In an intervention study with children with reading comprehension difficulties, Clarke et al. (2010) contrasted an oral language training, a text comprehension training, and a combined oral-text training. In the vocabulary component of the oral language training, graphic organizers (semantic maps), verbal reasoning tasks, mnemonics and illustrations to support the multiple-context learning approach were used. Results showed that the long-term gains achieved in reading comprehension were significantly higher for the children in the oral language training only group compared to both the text comprehension only group and the combined oral language and text comprehension training group. Improvement in children's oral vocabulary was the main mediator of the positive effects of the oral language training on reading comprehension.

Table 1 shows an overview of the main characteristics of the above mentioned main studies to facilitate comparison with the present thesis.

Table 1. *Summary of the Main Vocabulary Intervention Studies Presented in Comparison to the Present Thesis*

	McKeown et al. (1983)	**McKeown et al. (1985)**	**Nash & Snowling (2006)**	**Clarke et al. (2010)**	**The present thesis**
Num of words taught	104	24	24	60	60
Length of intervention	19 weeks	2 weeks	6 weeks	20 weeks	7 weeks
Words taught per day	8-10 (repeated over 5 days)	2	2 (noun, verb)	1	3 to 4 (noun, verb, adjective)
Group size	whole class	whole class	6 children	8 children	4 to 9 children
Num of sessions	75 (daily)	12 (daily)	12 (2 per week)	60 (3 per week)	17 (3 per week)
Length of session	30 min session	30 min session	30 min session	30 min session	30 min for core session
School grade level	4th grade	4th grade	Year 3 (7-8 y.o.)	Year 4 (8-9 y.o.)	3rd grade (7-8 y.o.)
Num of schools	2 (4 classes)	3 (4 classes)	1	20	3 (5 classes)
Sample characteristic	Low SES	Low SES	Low receptive vocabulary	Reading comprehension difficulties	Low SES
Sample size	82	82	24	84	100
Control group	Pairwise matching with parallel 4th-grade class	Pairwise matching with parallel 4th-grade class	No CG (pairwise matching between experimental groups)	Waiting list CG	Alternative CG
Methods compared	• Traditional[1] • "Rich instruction" (RI) • "Extended rich" (ERI)	• Traditional[1] • "Rich instruction" (RI) • "Extended rich" (ERI)	• Traditional[1] (definition; D) • Context (C)	• Null CG • Text comprehension (TC) • Oral language (OL) • Combined (C)	• Traditional read-aloud[1] • Definition • Context (both based on oral language and on the concept of "rich instruction")
General positive effects reported beyond the control	RI and ERI: taught words ERI: text comprehension containing the taught words	RI and ERI: taught words ERI: text comprehension containing the taught words	D and C: taught words C: text comprehension containing the taught words; untaught words in context	OL and C: taught words[2] TC, OL, C: std reading comprehension[2] None: std vocabulary measure[2]	

Notes. [1] The traditional method varied according to the usual practice in the various schools; [2] Long-term effects.

2.4.2. Bridging scientific evidence and school practice

Despite the great deal of discussion generated by international (e.g., NICHD, 2000; Snow, 2002; Snow et al., 1998) and Spanish research reports (e.g., MECD, 2012; Save the Children, 2013), the gap between evidence and practice in education still remains (Broekkamp & van Hout-Wolters, 2007; Pelatti et al., 2014). In the case of vocabulary instruction, it is no different. As mentioned in the introduction, this could be a reflection of the lack of evidence-based vocabulary programs in Spanish.

While the movement towards practices that are based on empirical evidence has its roots in the health sciences back in the second half of the 20th century (Stavrou, Challoumas & Dimitrakakkis, 2014), the idea of *data-driven decision making* has only started to become more influential in the area of Education around 1990 (McCardle & Miller, 2009). According to the APA (2005), evidence-based practice is defined as practices which integrate the theoretical information generated by high-quality research to the practical experiences gathered by educators working directly in the schools. Apart from the benefits for the students in relation to learning gains, evidence-based practices can also have an economic impact, as resources would be invested in teaching methods with higher probability of success (Duff & Clarke, 2011).

In the area of reading research, a similar idea has been put forward by Snowling and Hulme (2011). These authors argue that an effort has to be made to create a "virtuous circle" between theory and practice, that is, theoretical models should inform practice and the evaluation of these practices should feed back to inform and improve theory. In this sense, educational researchers have a great share of responsibility in facilitating theoretical information to the public of most interest: teachers and students. Therefore, this last section will focus on the translation of theories and evidence to practical recommendations for educators. It starts with a summary and an overview of the main ideas presented in this work followed by teaching suggestions and references for further reading.

2.4.2.1. Evidence-based recommendations for educators

One very important point to keep in mind about vocabulary knowledge is that it develops incrementally (Beck et al., 2002; Cronbach, 1942; Dale, 1965; Nagy & Scott, 2000). Therefore, not only the number of words a child possesses in his/her vocabulary is important, but also the quality of word knowledge is relevant, as it has been argued that it is the qualitative aspects of vocabulary knowledge that will determine how supportive this knowledge will be for higher-order processes in reading and comprehending text (Perfetti, 2007).

The main qualitative characteristics of vocabulary knowledge that should be taken into account are related to its components (linguistic, social), and richness of knowledge (synonyms, antonyms, examples, experiences, polysemy, context dependency). Additionally, the structure of word knowledge (Aitchison, 2003; Johnson et al., 1986; Rumelhart, 1980), its relation to other knowledge units (Anderson, 1983; Lehrer & Kittay, 1992), as well as word awareness (Stahl & Nagy, 2012), as a form of metalinguistic knowledge about words, are all relevant.

To achieve this, vocabulary intervention programs will need to be comprehensive and not simply aim to grow children's vocabulary breadth solely by exposing children to many words. In order to influence word knowledge depth in terms of extent, stability, integration, fast recall, and correct use, training programs need to include activities that are based on concepts of repeated exposure to words in multiple contexts, deep processing of word meanings, opportunities for word and related knowledge retrieval, explicit relation among words and word integration to relevant personal experiences and background knowledge (Beck & McKeown, 2007; Fawcett & Nicholson, 1991; McKeown et al., 1983; McKeown et al., 1985; Nash & Snowling, 2006).

Finally, due to assumed parallels between oral and written language, vocabulary interventions focusing on oral activities are recommended (Clarke et al., 2010). This can be especially useful when working with children with severe decoding difficulties, as oral

vocabulary training could provide these children with opportunities to systematically talk about words, their meanings, and usage, and, consequently, indirectly foster their reading comprehension abilities, without the extra burden of decoding from print.

How do we translate the literature findings in practical lessons to better support children's vocabulary development? The choice about the methods to be used in an educational intervention depends on many factors, including defining the main goals of the intervention (Beck & McKeown, 1996), specifying the underlying theory about the relationship between the main constructs (Snowling & Hulme, 2010), and lastly, choosing the most appropriate activities, depending on developmental aspects, such as age and ability level (NICHD, 2000). In general terms, the main goal of any vocabulary training targeting additional learning transfer effects to words not taught and to reading comprehension should be to foster the construction of high-quality word representations. As shown in Figure 2, the basic processes for building high-quality word representations can be divided in: (1) building mental representation of words by adding phonological and orthographic information; (2) refining the mental representation of words through multiple encounters, use, and repetition; (3) fostering storage mechanisms of words and the connection and integration of word knowledge to already existing knowledge structures; and (4) elaborating word knowledge by adding linguistic (semantic, syntax, morphology) and metalinguistic knowledge, and by encountering the word multiple times in diverse contexts.

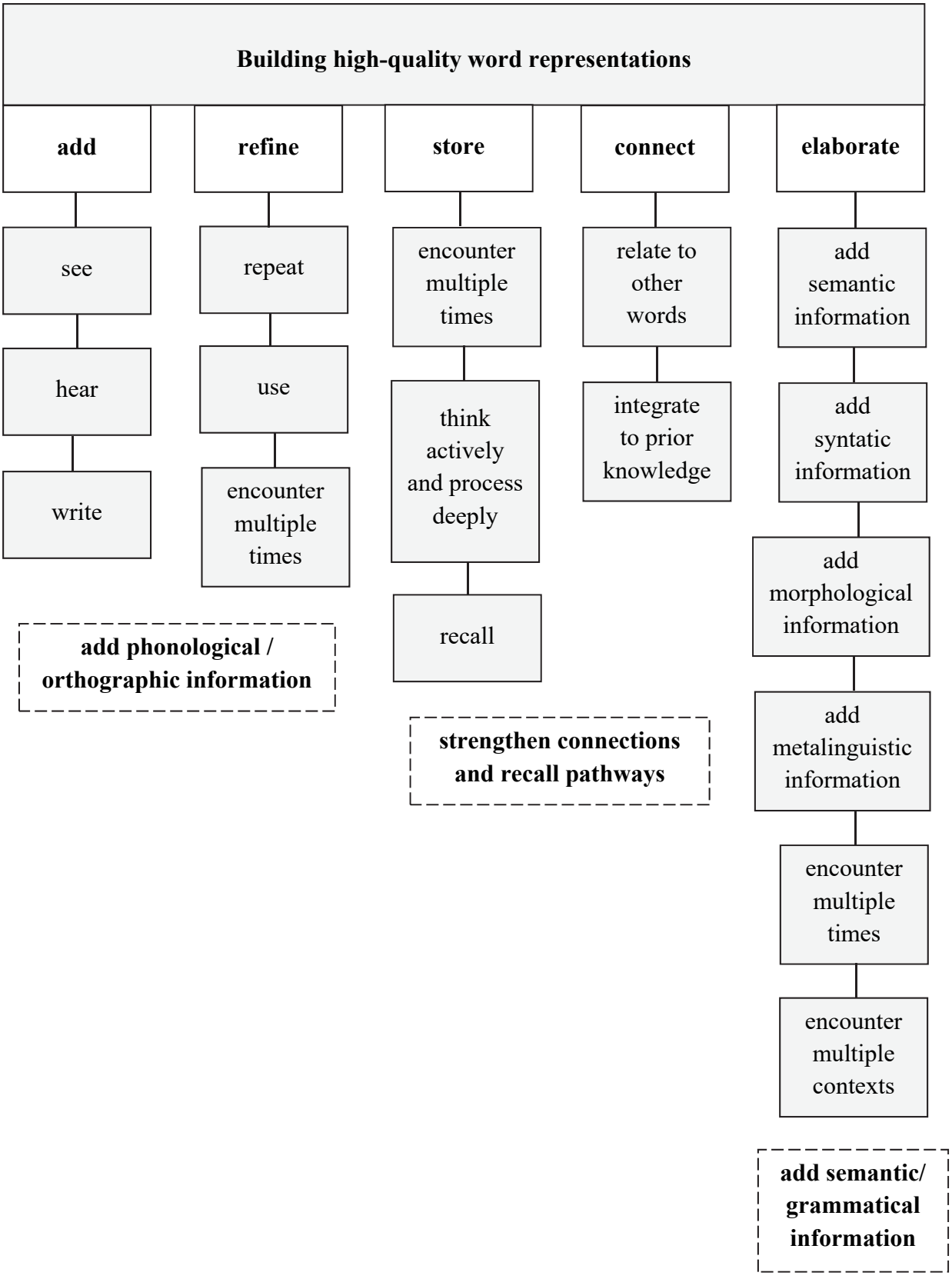

Figure 2. Building high-quality word representations.

There are many teaching methods that have shown positive effects on knowledge of taught words as well as transferring effects to novel word items and to comprehension of text passages containing the words (Beck et al., 2002; Butler, et al., 2010; Graves, 2006; NICHD, 2000; Stahl & Fairbanks, 1986; Stahl & Nagy, 2012; Wendling & Mather, 2009). Among the effective methods for teaching words explicitly are teaching student-friendly word definitions, teaching words in context, using semantic mapping, teaching synonyms, antonyms, and polysemy, to name a few. Recommendations in regard to fostering independent word learning and self-teaching strategies include contextual analysis (use of context clues) and morphological analysis (roots and affixes), as well as the use of reference tools (e.g., dictionary) as an external word learning strategy. Theoretically speaking, activities to foster word awareness are also promising in this respect.

There are many ways to operationalize these recommendations in meaningful tasks for the students. Apart from the few examples given from the literature in this work (pages 79-84), additional ideas for activities involving teaching word definitions and words in context, which are the two methods chosen for this work, can be found in the methodology section to come (pages 101-122).

Further, educators who can read in English will find the works by Graves (2006), Stahl & Nagy (2012), and, especially, Beck et al. (2002), as well as Wendling and Mather (2009) very useful for the practical work with students.

3. THE INTERVENTION

3.1. Word selection

There are two main questions when it comes to word selection for vocabulary instruction. The first relates to the number of words that should be taught and the second to what type of words should be taught.

3.1.1. Number of words

Regarding the number of words, it seems logical to assume that one should teach children as many words as possible. Nevertheless, the decision regarding the number of words to be taught depends also on the objectives of the intervention. Thus, should one aim for a deeper knowledge and a better mental representation of the words taught, a longer and more intensive training would be needed, which, in turn, would restrict the number of words that one would be able to teach in a year. In contrast, aiming for a broader but more superficial knowledge of words would allow a larger number of words to be taught, and this latter approach would require less time commitment.

It is important to note that although an intensive training regime that contains a limited number of words to be taught is usually effective for learning the specific concepts deeply, it may not necessarily incite transfer effects to new items nor have an impact in more broad reading related abilities, such as reading comprehension (see meta-analysis by Elleman et al., 2009). This means that a balance between the number of words to be taught and the time and resources invested for teaching each word must be found. The question is what would be a reasonable number to teach in each school year to promote the acquisition of relevant vocabulary according to the literature?

Some authors suggest that an average of 400 words per year would make a significant contribution to an individual's verbal functioning and text comprehension (Beck et al., 2002). In a study designed to measure the effect of long-term vocabulary instruction on lexical access and reading comprehension, a significant improvement in vocabulary knowledge was found for a program, in which eight to ten words were taught per week (McKeown et al., 1983).

Following these lines and given the fact that the aim of the present study was to find a balance between supporting the development of high-quality mental representations of the words taught considering the available time resources, nine words per week (three words per session) were planned to be taught in this intervention.

3.1.2. Type of words

The second relevant question alludes to which words should be taught. Each teacher should choose the target words depending on the age and level of vocabulary knowledge of their class. Nevertheless, there are some suggestions about how to proceed in order to select adequate and relevant words.

For this project, multiple criteria were used to choose the words to be taught. Based on the ideas proposed by Beck and colleagues (2002), "tier-two" words were selected. According to these authors, tier-two words are characteristic of mature language. This is in accordance with the *zone of proximal development theory* (Vygotsky, 1930-34/1978), which supports the idea that the best learning effect is achieved when material is just above the learners' current level. Nevertheless, it is important to point out that children should be able to grasp the general concept. Accordingly, words belonging to a Spanish word reference list of basic vocabulary (Sensat, 1978) were not considered for inclusion, just as the items from a "suggested word list" (Ferrándiz-Mingot, 1978) provided to the teachers at the start of the year as part of the common

curriculum were also not included. Besides being more sophisticated than the words currently employed by the children, the chosen words should not be too narrow in the domains in which they can be used and should be relevant for the children's environment. The reason for this is to increase the probability for them to be used in a variety of situations in children's daily conversations. To illustrate, we will compare the word *antiguo* [ancient, antique] to the more common form *viejo* [old]. The usage frequency of the term antique or ancient will increase with the age of the reader/speaker, that is, it will be more commonly used in more mature language. Nonetheless, it is a concept that children can grasp and a word that can be potentially used in many situations children encounter. Thus, the word antique, would be considered a tier-two word and would be given preference as a word to be taught in the training in comparison to the word 'old.'

As a source for age adequate and relevant words, children's books were used. For the selection of the books, suggestions from publishers and local public libraries as well as the popularity of the characters and stories among the children, as informally rated by parents and specialized book stores, were taken into account. The three books finally chosen for the intervention were "El extraño caso del volcán apestoso" [The strange case of the smelly volcano] by Geronino Stilton (Elisabetta Dami) (ISBN 978-84-08-08975-9), **"**Kika Superbruja en el país de Liliput" [Kika Superwitch in the land of Liliput] by Knister (ISBN 978-84-216-8311-8), and "El contador de estrellas" [The stars counter] by Sofía Sánchez Adalid (ISBN 978-84-666-4529-4).

A number of steps were required to create the final list of words used in the study. Firstly, all potential tier two words were extracted from the books by the researchers. Chosen words were constrained to three grammatical classes, namely adjective, verb, and noun, as these are the main content word classes in Spanish (Justicia, 1995). Both abstract and concrete nouns were allowed. This resulted in a list of 270 words. Secondly, from this list, words of low and

high frequency were eliminated according to the frequency dictionary for written Spanish in children between 6 and 12 years old by Martínez-Martín & García-Pérez (2004). Middle frequency words were defined as words appearing between 10 and 70 times per one million words. Thirdly, in cases where two words had similar meanings, one of them was randomly removed from the list. Fourthly, words that were low in both productivity and richness were eliminated. Productivity was measured by counting the number of derivate forms given for a certain word, while richness was defined as the number of definitions. These countings were based on the information provided in three pre-selected dictionaries appropriate for school children at this age (Diccionario Anaya Lengua Española, 2009; Diccionario Escolar de la Lengua Española, 2009; Nuevo Diccionario Básico de la Lengua Española, 2005). Decisions were also based on trying to keep a balance between the different classes of words. A further important restriction was that none of the words appeared in the standardized vocabulary tests chosen to evaluate vocabulary knowledge. Finally, a subjective judgment was made by the research team to ensure that the remaining words were adequate. This resulted in a small number of exceptions being made in relation to frequency in order to keep the list of words balanced and as adequate as possible for the children – specifically, eight words falling below the medium frequency band (average frequency = 7.39) were selected for inclusion.

This procedure resulted in a final list of 75 words, from which 60 were randomly selected to be taught in the intervention (Appendix 1) with the remaining 15 serving as control words (Appendix 2). Statistical analysis showed that taught and control words did not differ significantly with regards to length ($t[73] = -1.17$, $p = .247$), frequency ($t[73] = -.45$, $p = .650$), richness ($t[73] = .46$, $p = .649$), and productivity ($t[73] = .83$, $p = .409$).

3.2. Session structure

Three sessions per week over a seven-week period were planned for a total of 20 sessions plus a final wrap-up session. For both the control and training groups, each session lasted 50 minutes. In each session for the training groups, three words (one verb, one adjective and one noun) were to be taught. However, due to unforeseen changes to school schedules during the intervention phase, three training sessions had to be cancelled. The nine words that were planned to be taught on those days were transferred to the sessions that followed. This meant that in the first eight sessions the teaching plan of three words per session was followed. In the remaining nine sessions, four words per session were taught. The sessions were held in separate rooms within each school to avoid that children could observe or hear directly what was happening in a different intervention group. Each small group was composed of four to nine children. The difference in size of the small groups was due to the fact that children were randomly assigned to the training or control groups within classroom. Thus, the size of the small groups depended on each class size.

3.2.1. Control group protocol

For ethical reasons and because the implementation of a waiting list null control group was not viable in this project, children in the control group were offered an alternative intervention. The session in the control group was divided in three parts and consisted of reading aloud to the children a pre-determined number of chapters from a book combined with craft work based on the story of the book. The books used for the reading aloud activity were the same books from which the words to be taught were originally selected. Thus, children in the control group were exposed to the same words as the children in the experimental groups, but the control group children did not receive any explicit teaching of the meanings of the words. This is consistent with the research question of whether these methods would provide an

advantage over a more “traditional” approach to reading instruction in Spanish classrooms, for example, found in books commonly used in the schools (e.g., Albella & Fernández-Montijano, 2006).

The read-aloud session was based on the TWA approach (**T**hink before, think **W**hile, think **A**fter reading; Mason, 2013), which divides the reading activity into three main parts: before, during and after reading. In the first part, the main goal was to situate children’s minds in the main subject of the story (think about what you already know; think about what is to come). By doing so, it is expected that previous knowledge about the subject area will be activated, which in turn will support the addition of the new learned information, including new vocabulary, to the already existing knowledge structure. In the second part, children were asked to actively listen to the story being read aloud by the trainer. Concentration, attention and sitting still were abilities trained at this point. During reading, trainers asked questions about what children had just heard to monitor understanding and make sure they were following and paying attention. In the last part, children had the opportunity to talk about the story, summarize the story in their own words (oral retelling) and remember the parts which they liked the most as a form of reflection about the story heard. Figure 3 shows a summary of the structure of the sessions in the control group.

Session Structure *Control Group*
Part I: Thing before reading (10 mins) situate the mind
Part II: Think while reading (20 mins) concentrate sit still and listen monitor
Part III: Think after reading (20 mins) summarize

Figure 3. Session structure in the control group.

At the end of each book, children did craftwork related to the theme or story of the book. For example, the first book involved an adventure in a volcano, so, at the end, children made their own volcano out of paper, glue, and colored pens (Figure 4).

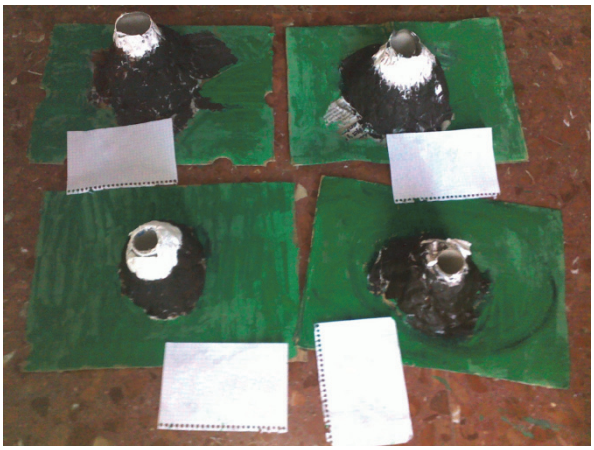

Figure 4. An example of craftwork activity at the end of the read-aloud activity in the control group.

3.2.2 Training groups protocol

The sessions in the training groups were also divided into three parts, with activities in the first and the last parts being identical for both training groups. Part I "Introducing the Words" ("Presentando las Palabras") and Part III "Recalling the Words" ("Repasando las Palabras") took around 10 minutes each. Part II "Learning the words" ("Aprendiendo las Palabras"), was the core of the training conditions in which each group were taught the words of the day using the specific training methods relevant for their group (see details below in the "Specific Training Methods" section, page 101). For Part II, trainers had 30 minutes to teach the words. Thus, the trainer could dedicate approximately 10 minutes of teaching for each word. Figure 5 shows a summary of the structure of the sessions in the training groups.

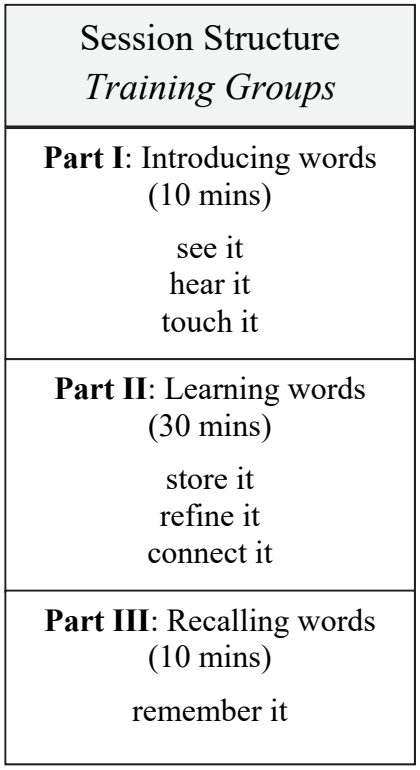

Figure 5. Session structure for the training groups.

3.3. Teaching concepts and methods in the training groups

3.3.1. General teaching concepts

The intervention was based on **distributed and retrieval practices** (Cepeda, Pashler, Vul, Wixted, & Rohrer, 2006). These authors argued that children learn best if they are taught in smaller chunks and with small intervals between sessions, as opposed to a mass amount of content at once with a long period of time between sessions. These authors also suggest that children should be **repeatedly exposed** to the material and that exposure should incorporate **various contexts**. To reinforce learning of the words in the training groups, all sessions ended with an activity that involved getting them to **remember the information** learned in a cumulative manner, that is, after each session, not only were the words taught that day included, but all of the words from previous sessions were also included in the retrieval activity, so that words would be repeatedly seen.

As the focus of the overall intervention was on oral vocabulary training, most of the activities required an **oral response** from the children. Specifically, children were asked to pay attention to written information on a paper or poster, or to pay attention to a picture (visual) or to listen carefully (auditory), then think, and lastly explain, perform or tell something to the group. When children had difficulties in formulating an answer, trainers modeled answers based on **scaffolding** teaching principles (Vygostky, 1930-1934/1978; Wood, Bruner, & Ross, 1976). Nevertheless, as the use of **multi-sensory** activities is suggested for teaching practice in order to facilitate the usage of different pathways for the information to reach the brain (International Dyslexia Association, 2001), some activities also involved drawing, writing, and manipulating items, such as foam letters, cards (tactile; fine motor skills), and a ball (kinesthetic; gross motor skills).

Additionally, based on theories of memory (Craik & Lockhart, 1972) and learning strategies (Marton & Säljo, 1984), an effort was made to promote a **deep processing** of the items to be learned. In contrast to a surface level approach, some activities should potentially prompt students to try to reflect upon and understand the meaning of the new words by making connections between information, comparing, evaluating, structuring, combining, and creating examples.

For the last session (session 21), a wrap-up activity was designed ("telaaraña de palabras" [word cobweb] in the context group and "diccionario gigante" [giant dictionary] in the definition group). The primary goal of this activity was to **strengthen recall pathways** by giving children the opportunity to talk about all of the words learned and, thus, to incite the activation of the target words in their mental lexicon one last time. Also, it was a friendly way to psychologically prepare the children and the trainers for the end of the intervention. As previous experience in Spanish schools showed, the last day can be strongly emotional for both parties.

An additional important aspect of the study was the nature of the **materials** used. As schools located in socially and economically disadvantaged neighborhoods tend to have scarce resources, the materials developed for the intervention were intentionally kept simple. All materials used could be made by teachers themselves or purchased without having to invest a great amount of money. The intention of this strategy was to increase the probability of the intervention being implemented by educators even in cases in which the schools are deprived of educational materials and financial resources.

Due to the potential of **word awareness** to create learning transfer effects, efforts were made to incorporate activities in the core program of the training groups to motivate children to be curious about words, to enjoy playing with and investigating words, their usage, multidimensionality, nuances of meaning, and interrelatedness (Graves, 2006). In addition, in

order to encourage children to think about words outside of the intervention sessions, a few extra homework activities were included. Examples of these activities include: a) asking children to find out what the longest word is in Spanish, b) from the words they learned so far what was the one with the greatest number of different definitions, c) to ask their parents what their favorite word was, d) to write down the first word they heard when they woke up on the following day.

3.3.2 Specific Training Methods

As mentioned, Parts I and Part III of the session were the same for both training groups and four different activities were developed for each part.

In **Part I** "Introducing the Words" (see it / hear it / touch it), the words of the day were introduced with a short activity of about 10 minutes. In this task, depending on the time children would need for each word, they had the opportunity to try to find out in a motivating and playful manner, one or more of words they were about to learn. The main goal of Part I activities was to get children involved, motivated, and curious about the words. Moreover, by seeing and hearing the words, children were expected to add orthographic and phonological information through the visual and auditory input. The list of the activities used in Part I, the main sensory channels activated, the materials needed, and a short description for each of the activities, are found in Table 2.

Table 2. *Description of the Activities Used in Part I of the Intervention Session in the Training Groups*

Name of Activity	Mode	Main Sensory Channels	Materials Needed	Description of Activity
Letras Mezcladas [jumbled letters]	G	tactile, visual (manipulation of letters)	foam letters and paper with anchor letters	Children are asked to try to put the letters in the right order to form the target word.
El Ahorcado [hangman]	G	visual (oral - speaking)	Blackboard	Children are supposed to guess letters to try to form the target word, before the hangman is complete.
Sopa de Letras [crossword puzzle]	I	visual (written)	sheet of paper with letter matrix	Children are asked to find and mark the target word in a letter matrix.
Lengua *Funky* [funky language]	G	auditory (oral - listening/speaking)	-	The trainer says the target word in a 'funky' way and children are supposed to try to guess what word it is. *funky* = using the same vowel, saying the word backwards, changing order of syllables etc.

Note. Mode: G = group activity; I = individual activity.

Part III "Recalling the Words" lasted around 10 minutes and consisted of activities aimed in strengthening the recall pathways for the newly learned words. The selected activities in Part III were designed to motivate children to try to remember the words and/or their meanings which they had learned so far. Therefore, for this part, all activities were in the form of a recall game. The list of the activities used in Part III, the main sensory channels activated, the materials needed, and a short description for each of the activities, are found in Table 3.

Table 3. *Description of the Activities Used in Part III of the Intervention Session in the Training Groups*

Name of Activity	Main Sensory Channel	Materials Needed	Description of Activity
Carrera de Palabras [word race]	tactile, auditory (manipulation of pieces) (oral – listening/speaking)	game board and plastic pieces	Before the child throws the dice he/she has to answer a question about the words learned so far; if the answer is correct they are allowed to throw and move forward, otherwise they have to wait for the next turn; The winner is the first to make one complete round, or who is winning when time runs out.
Patata Caliente [hot potato]	kinesthetic, auditory (manipulation of ball) (oral – listening/speaking)	ball	Children are supposed to pass the ball quickly until trainer says "stop"; the child who has the ball when the trainer said "stop" must answer a question about the words learned so far; If the answer is wrong, he/she does not play for one round.
Juego de la Oca [oca game]	tactile, auditory (manipulation of pieces) (oral – listening/speaking)	game board and plastic pieces	Before the child throws the dice he/she has to answer a question about the words learned so far; if the answer is correct they are allowed to throw and move forward, otherwise they have to wait for the next turn; The winner is the first to get to the end, or who is winning when time runs out.
Juego de Cartas [card game]	tactile, visual (manipulation of cards) (oral – speaking)	cards with words, definitions, and pictures	Trainer spreads the cards on the table and each child gets a turn to pick a card, which can have a word/definition/picture on it; If it is a target word, the child has to give the right definition; If it is a definition or picture, the child has to guess the target word that corresponds to it; If the answer is correct, the child can keep the card, if not he/she has to leave the card on the table; Wins the one that has more cards. *Variation*: child takes a card from a pile and has to say the word that corresponds to the definition/picture, or vice-versa.

Note. All activities are group activities.

Part II "Learning the Words" required a longer time (30 min) to allow most children to speak and actively participate. The main goal was to teach children the meaning of the target vocabulary by fostering not only the storage process, but also the refinement and connection of the acquired knowledge to prior experiences and knowledge about words and related contexts. The two vocabulary training methods chosen for the two intervention groups were named **Definition** and **Context**.

3.3.2.1. Definition method

The definition method involved the direct instruction of dictionary like definitions of words. The central idea of this method was that the trainer should try not to explicitly elicit relations among the words taught during the session. This meant that words were presented and treated in isolation. The focus of the teaching activities was the definitions of words themselves, in the sense that children learned what the components or characteristics of a "good" definition are. High-quality definitions were defined as the ones that are effective in helping others to understand the concept or meaning of an unknown word. They have a certain structure and use certain components that can be identified, such as anchor sentences, synonyms, antonyms, and examples.

TASK 1: Exploring examples of definitions

To examine definitions and make relevant information in a definition more explicit, the activity "Diccionario" ["Dictionary"] was used. As well as practicing dictionary use as an external strategy to find out the meaning of unknown words, in this task children had the opportunity to be exposed to multiple examples of definitions for the target words, as three different age-appropriate dictionaries were pre-selected to be used in the activity (Diccionario

Anaya Lengua Española, 2009; Diccionario Escolar de la Lengua Española, 2009; Nuevo Diccionario Básico de la Lengua Española, 2005). First, children looked up the words in the dictionaries, and then read aloud their definitions. Following this, guided by the trainer, children tried to identify what elements were present in the various definitions, such as antonyms, synonyms, anchor sentences, and examples. The exposure to a variety of definition examples made more explicit to children that word meanings can be expressed in different ways.

TASK 2: Identifying components of definitions

In the activity "Palabras amigas y enemigas" ["Friends and enemies"], children learned in more detail about the concepts of synonyms and antonyms and that these can also be used when trying to explain a word. First, children were prompted to come up with synonyms and antonyms for the target words. In a second step, they were allowed to ask their classmates to gather more synonyms and antonyms for the words. In cases when children did not know any synonyms or antonyms for the target words, the trainer helped them trying to get this information from the dictionaries. Afterwards, children had the chance to write down the synonyms and antonyms in a chart. Finally, the children drew something related to the word (Figure 6).

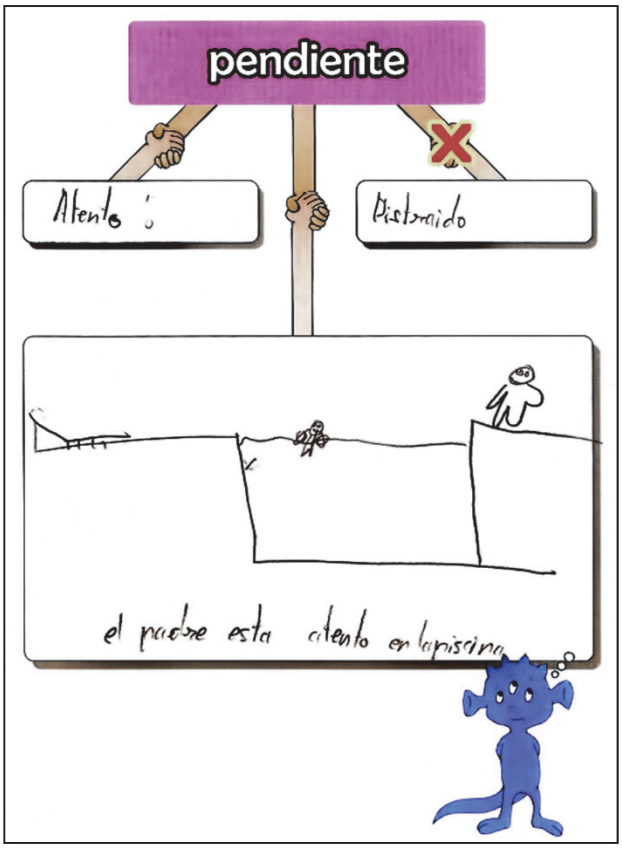

Figure 6. An example of one response given in the activity "Friends and enemies" for the target word 'pendiente' (a polysemous word, in this case used by the child as [watch attentively]).

TASK 3: Structuring definitions

In order to learn how to build and structure a definition, the activity "Detective de palabras" ["Word detective"] was used (Figure 7). In this activity, children were guided by the trainers to come up with a "good" definition of the words. Using the technique of questioning, trainers and children tried to find out more and more about the target word: Is it positive or negative? Is it an object? Is it an action (verb)? Is it a person? Is it a quality or characteristic of a person/object/situation (adjective)? How does it feel? What does it look like? What is it used for? Have you heard this word before? In what situation? In what situation can you observe

this? Can you give me an example of a sentence using the word? Can you tell me another word that has the same meaning/ the opposite meaning? In this way, children could actively think and contribute with their personal prior knowledge. After gathering enough information, the trainer put together the relevant information to build a definition of the word using anchor sentences and children were asked to repeat it aloud.

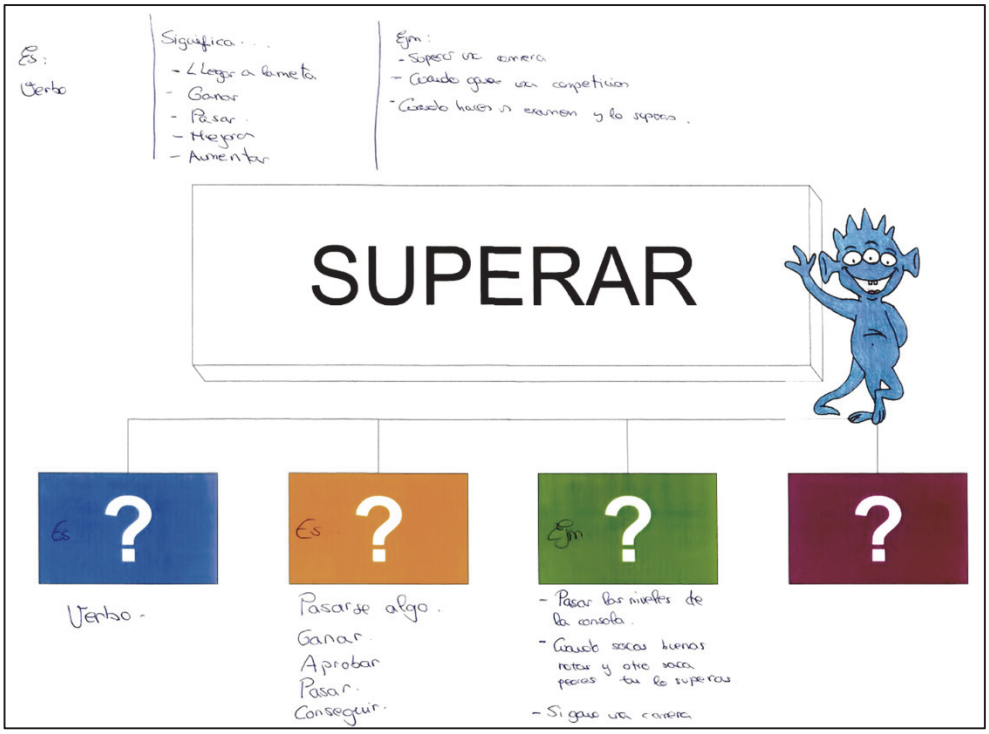

Figure 7. An example of the activity "Word detective" for the target word 'superar' [to exceed, to surpass].

TASK 4: Evaluating definitions

To foster a deep processing of the definitions learned, the activity "Los jueces" ("The judges") was designed. In this activity, the trainer wrote the definition of the target word on the board and children were prompted to evaluate it and express their decision by using *smileys*. In

this sense, children were to check the elements used in the definitions, judge their quality as "good" (correct, useful, easy to understand = happy *smiley*), "regular" (correct, but not so useful, difficult to understand = neutral *smiley*), or "bad" (incorrect, not at all useful = sad *smiley*), and think of a reason why they decided so. Besides reinforcing the identification of elements present in a definition, explanation and reflection also trains word knowledge on a meta-cognitive level (McNamara, 2004). When children could not come up with an answer, trainers modeled possible reasons, such as "because I can understand it well", "because it contains simple words that I understand", "because it gives an example that makes it clear", "because I cannot understand it", "because the words used in the definition are too difficult", "because I don't know what ___ means", "because it is written in an easy/ in a complicated way."

Below is an example of presented definitions for the target words 'aficionado' [fond of, enthusiastic about] and 'fundamental' [fundamental, essential]:

Target word <u>aficionado</u>	• Definition presented: *Que hace algo con afición.* [To do something with enthusiasm.] This is a 'regular' definition, as it is correct, but it only repeats the word in another grammatical form.
	• A more useful definition could be: *Se dice de la persona a la que le gusta mucho una cosa o dedicarse a una actividad.* [Someone that likes something very much.]
Target word <u>fundamental</u>	• Definition presented: *Primordial, elemental.*[fundamental, essential] This can be a 'good' definition, if you know the synonyms / or one could say 'regular', as it is right, but it depends on your knowledge of the synonym words.
	• A more useful definition could be: *Que es lo más importante y necesario.* [Something that is really important and necessary.]

TASK 5: Producing definitions

In the activity "Exprésate" ["Speak out"], children learned more explicitly how to build a definition and structure word information by using the elements learned, as synonyms, antonyms, examples, and anchor sentences (Beck et al., 2002). Examples of such anchor sentences are: "something/someone that___," "it's when something/someone___," "it's the same as/the opposite to____". Besides practicing this task with the words of the day, children were asked to make up a word and build a "good" definition in order that classmates could understand its meaning. This was an attempt to include an extra fun factor.

Here is a concrete example with the target word 'aficionado' [enthusiastic]:

"*Es una persona que...* + *siente mucho interés por una actividad."*

[Someone that… + is very interested in an activity.]

anchor sentence | definition

Table 4 shows a list of the activities used in Part II for the Definition experimental group with the main sensory channels activated, the materials needed, and a short description for each of the activities.

Table 4. *Description of the Activities Used in Part II of the Training Session in the Definition Group*

Name of Activity	Mode	Main Sensory Channel	Materials Needed	Description of Activity
Detective de Palabras [word detective]	G	oral with visual aid (listening/speaking)	paper with word and questions	Trainer asks questions to try to find out what the target word means and build a definition with children's help.
Los Jueces [the judges]	I	tactile, oral with visual aid (manipulating cards/ speaking)	paper with definitions or blackboard, and cards with 'smileys'	Trainer asks if the presented definitions match the target word; Then, children are prompted to evaluate the definitions by placing *smileys* and to explain why they think so.
Diccionario [dictionary]	I	visual, oral, tactile (listening/ reading/ speaking) (manipulating dictionary)	dictionaries	Trainer teaches the children how to use the dictionary; then, the children look for the target word in the dictionary; Children read aloud the definition.
Palabras Amigas y Enemigas [friends and enemies]	I	oral, visual (listening/speaking/ writing/ drawing)	paper with word, pencil	Children are asked if they know a synonym/antonym for the target word; If yes, they write it down; If not, children look up in the dictionary and write down the answer; then, they can draw a picture that represents the target word.
Exprésate [speak out]	G	oral with visual aid (listening/speaking)	paper with word and anchor sentences	Trainer prompts the children to use the anchor sentences to build a definition for the target word.

Note. Mode: G = group activity; I = individual activity.

Figure 8 shows an overview of all the tasks in the definition training group and their main objectives.

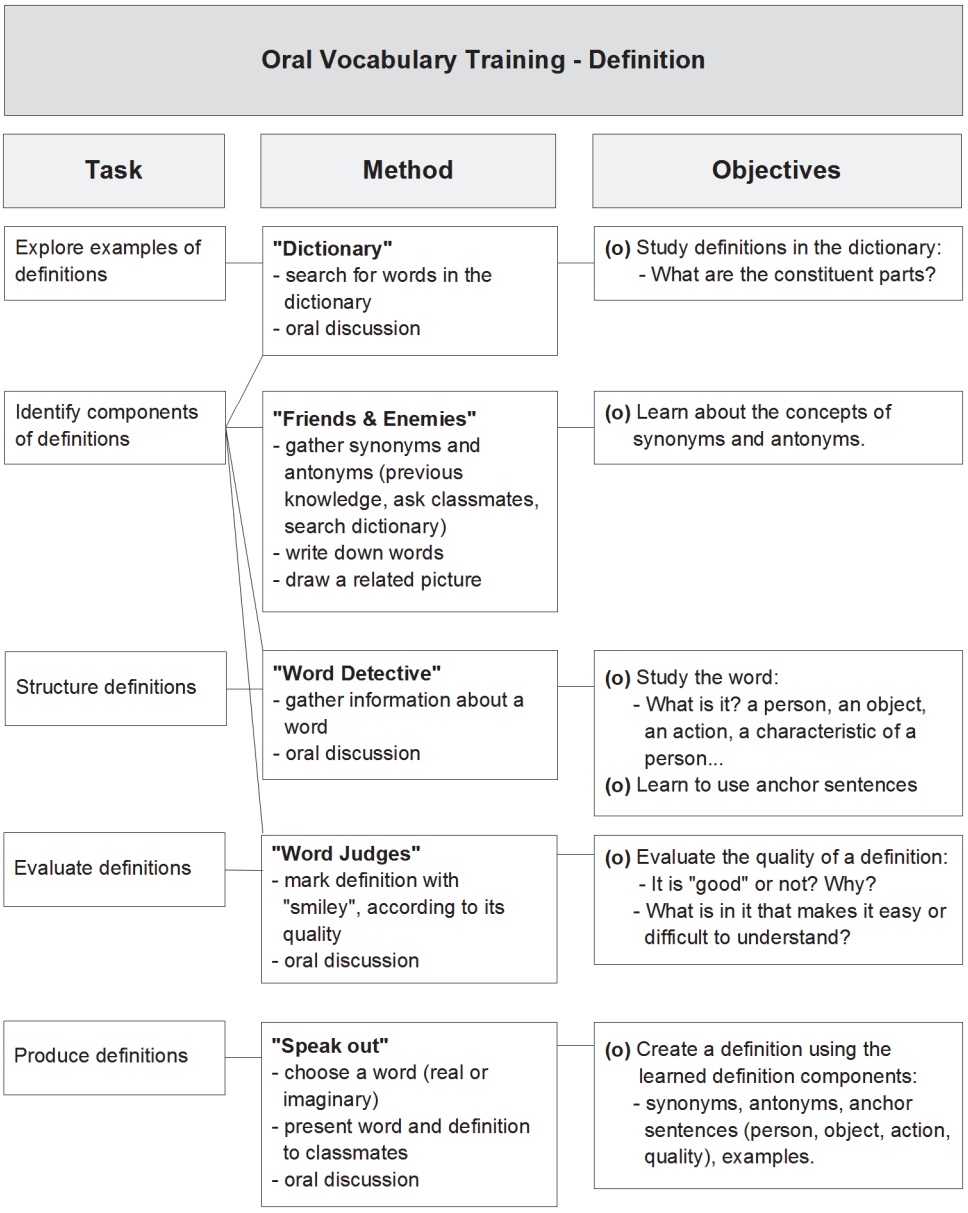

Figure 8. Overview of tasks and main objectives in the definition training group.

3.3.2.2. Context method

The second method of training vocabulary was the context method, with which words are instructed embedded in a text or dialogue. The most important aspect of this method was that the trainer should try not to give a direct and explicit dictionary like definition of the words being taught at the onset of each session. In this group, children were supposed to build their own knowledge around the word by themselves and, especially, with their own words, and so, encourage them to formulate their own verbal definitions. This was to be accomplished based on the information encountered in the presented contexts, in the discussions with their group mates and by taking advantage of their prior experiences and already acquired knowledge. This way, knowledge of new words should be well connected to other knowledge structures already present in the mind.

The main role of the trainer in this group was to help and guide children in building and structuring their own word knowledge network, using their own words, and not a pre-set dictionary like definition. Thus, the activities were designed to foster the exchange between new learned information and prior knowledge. Connections among the new learned words and between new words and personal experiences were emphasized through drawings and self-made up sentences and stories.

The activities, for which there was no pre-determined context, started by asking the children if they already knew the meanings of target words. In the cases when children spontaneously gave a definition of a word, trainers were instructed to give a short feedback, if it was correct or not, and if not, give a short definition of the word and a personal example to it. As already mentioned, instead of getting into a discussion about the definition itself, trainers were supposed to refer to a context, in this case a personal relevant context.

TASK 1: Structuring word knowledge

The main objective of the activity "Mapa semántico" ["Semantic map"] was to structure knowledge and to allow the new knowledge to be connected to already existing knowledge network structures. This was done using an adapted form of graphic organizers (Nash & Snowling, 2006). Children received an activity sheet with the target word in the middle inside a square. The middle square was connected to four blank circles around it (Figure 9). Children were asked to write, draw or attach a picture they thought that could be related to the word. Afterwards, each child was asked to tell the class about one of the squares they filled and how this word, sentence, drawing or picture was related to the target word. In this activity, there was no pre-determined context for the words, so children were supposed to create their own context for the word and connect it to their prior knowledge and personal experiences with the words.

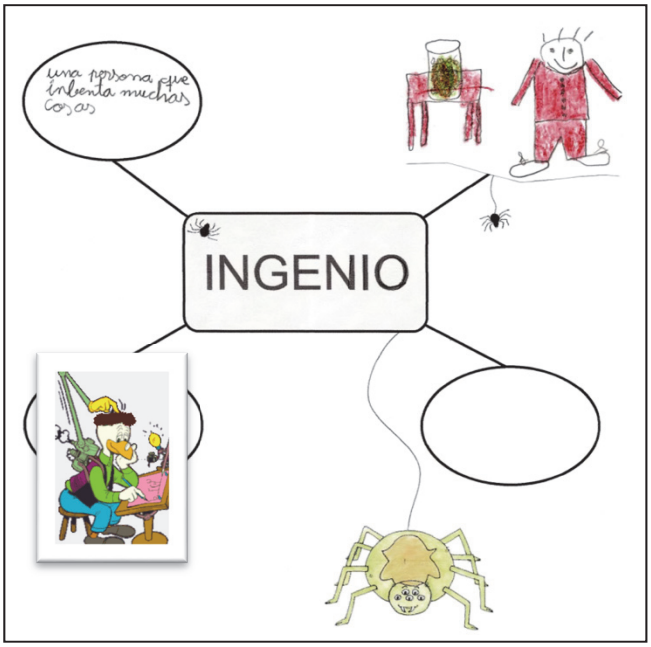

Figure 9. An example of the activity "Semantic map" for the target word 'ingenio' [inventiveness].

TASK 2: Connecting to prior knowledge

Another activity that had as its main goal connecting the new word knowledge to personal experiences was "Dibujando mis experiencias" ["Drawing my experiences"] (Nash & Snowling, 2006). Children received a piece of blank paper and were asked to draw something related to an experience they had with the word (Figure 10). To add a fun and motivating factor to the activity, the children were prompted to exchange drawings with classmates when they were finished. Afterwards, each child should try to guess and tell the class what the experience of the classmate with the word was.

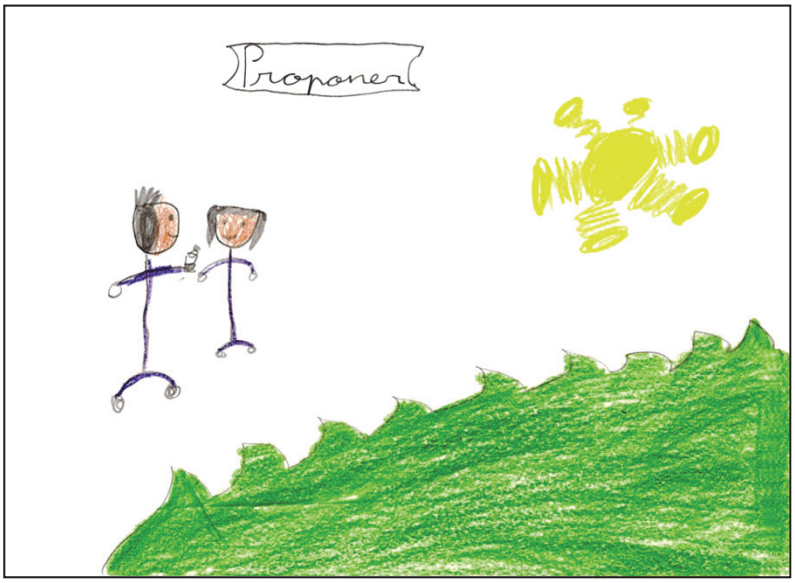

Figure 10. An example of the activity "Drawing my experiences" for the target word 'proponer' [to propose]

TASK 3: Producing coherent context (1)

In the activity "Historieta" ["Comic strip"], children not only had the opportunity to practice using the word in a context, but, in particular, to use their word knowledge in order to

produce a coherent context based on the sequence scenes of comic strips. This activity enabled training of children's oral narrative skills and fostered their knowledge of story structure, use of grammar, temporal sequencing, and use of connectives (Nuffield Project; Bowyer-Crane, Snowling, Duff, Fieldsend, Carroll, Miles, Goetz, & Hulme, 2008). Working in small groups of two, children received a comic strip with three scenes (Figure 11) and where asked to practice telling a story using the words of the day. After, they were asked to orally present the story to the group.

Figure 11. An example of the activity "Comic strip" for the word 'asombro' [astonishment, frighten, surprise]. Drawn by Maria Asunción Panadero Sanchis especially for the study.

TASK 3: Producing coherent context (2)

Again, the activity "1 + 1 = ?" was free of pre-determined context. Children used their creativity to try to connect two newly learned words. Using an activity sheet with squares and a plus and an equal sign (Figure 12), children were asked to fill in the empty squares with two of the new learned words. Afterwards, they were prompted to try to make up one single sentence in which both words appeared.

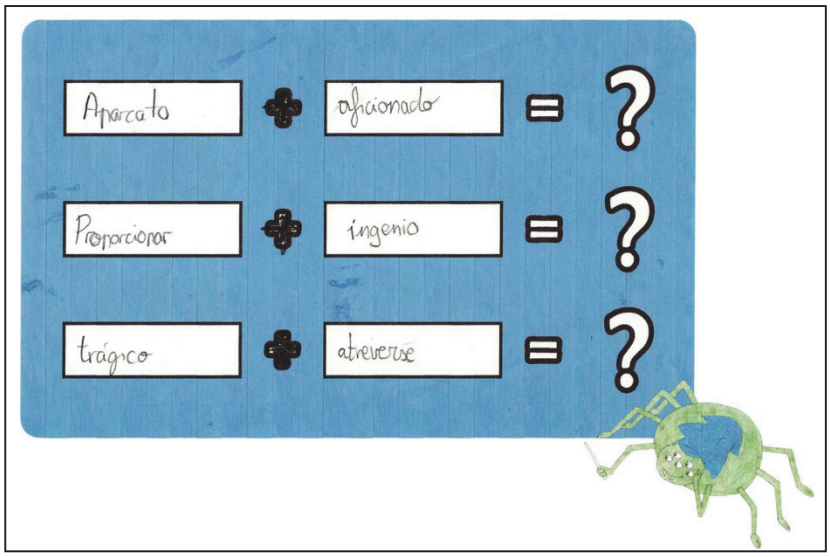

Figure 12. An example of the activity "1 + 1 = ?"

The remaining activities focused on showing pre-determined contexts in the forms of stories, text paragraphs, and short dialogues, containing the words of the day. In the beginning, children were asked if they knew the target words. Nevertheless, in contrast to the activities with no pre-determined contexts, when children did not know the words' meanings, in these activities the trainers were supposed to turn children's attention to the context without giving any definition. The main goal was to try to gain as much information as possible from the context in which the words were presented in order to understand what the words meant or, in case children already knew the word, to refine or elaborate the knowledge they already possessed.

TASK 4: Evaluating context

In the activity "Escucha con atención" ["Listen carefully"], children were asked to actively listen to a short dialogue or text and try to find mistakes in the context (Nuffield Project; Bowyer-Crane, et al., 2008). The trainer asked the children to listen carefully and read aloud a

short dialogue or text. Afterwards, children were asked whether the target word fitted the context or not. If not, children were prompted to try to correct the dialogue or text, so that the word could fit in correctly. Just as in other evaluation exercises, this activity was designed to promote a deep processing about the new information learned.

Here are two examples:

(1) short text for the target word 'insistir' [to insist]

Ángela tiene cumpleaños el sábado. Le he dicho que no podría ir a su fiesta, porque tenía que ayudar mi hermano menor a estudiar para un examen que tiene el lunes. Como Ángela quería mucho que fuera a su fiesta, habló con mi madre. Insistió mucho hasta que llegaran a un acuerdo. Ángela me ayudará con mi hermano el domingo y yo podré ir a su fiesta el sábado.

Correct (word fit to context)

[Angela's birthday is on Saturday. I told her I could not go to her party, because I needed to help my little brother in preparing for his exam on Monday. As Angela did not want me to miss her party, she talked to my Mom. She insisted so much until they came to an agreement: I could go to her party on Saturday if Angela supported me in helping my brother on Sunday.]

(2) short dialogue for the target word 'aplicado' [diligent]:

- *Mira, Giovanni, esa no es la tarea que deberías haber hecho.*
- *Ah, ¿no? Perdona maestra, me he confundido.*
- *Bueno, no pasa nada, pero tienes que concentrarte más en la clase, ¿vale? Si continúas así aplicado, podrás tener problemas en el examen.*

Incorrect (word does not fit to context)

[- Giovanni, this was not the task you were supposed to do. – Oh, really? Sorry, I think I got confused. – Well, it is ok this time, but I think you should pay more attention in class, ok? If you continue to be so diligent, you might have problems in passing the exam.]

TASK 5: Manipulating context

The activity “El eslabón perdido” [“The missing link”] was designed mainly to foster the high-order cognitive ability of inferring meaning of words from text. An adaptation of an inference training composed of lexical elaboration, question answering/generation, cloze type tasks, and comprehension monitoring was used (McGee & Johnson, 2003; Yuill & Oakhill, 1988). The trainer read aloud a short story in which words were missing (cloze sentences; see example of story in Appendix 3). Children were asked to listen carefully and try to fill in the blanks with the learned words. Most importantly, trainers were supposed to ask children how they found out that the word fitted to the specific blank space in an effort to make the children’s approach of finding cues in the text more conscious to them. In this task, the trainer stopped at pre-determined parts of the story and asked children questions about the text. The purpose was to monitor their comprehension and prompt them to think about what happened and make predictions about what it was to come. At the first stop, children were asked about what kind of text they were listening to. At this point, the trainer had the opportunity to teach them about the different types of texts there are (expository, narrative, story, fairy tale, poetry or letter). At the end of the activity, also as a comprehension monitoring strategy, children were asked to try to find the main ideas of the story by summarizing it in only four sentences. In a second step, children received an activity sheet with four blank squares and were prompted to summarize the story in four words and write them down (Figure 13). Lastly, on the same activity sheet, children were asked to give the story a title.

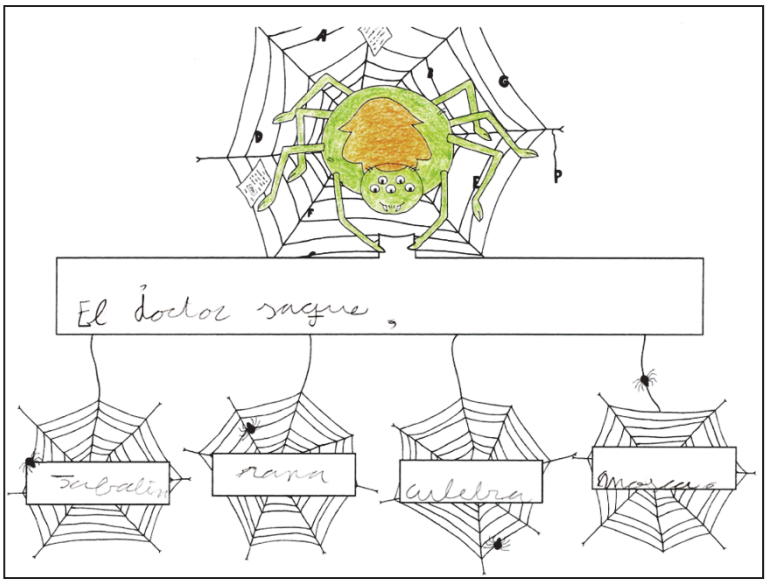

Figure 13. An example of the activity "The missing link" for the story in Appendix 3.

Table 5 shows a list of the activities used in Part II for the Context experimental group with the main sensory channels activated, the materials needed, and a short description for each of the activities.

Table 5. *Description of the Activities Used in Part II of the Training Session in the Context Group*

Name of Activity	Mode	Main Sensory Channel	Materials Needed	Description of Activity
Mapa semántico [semantic map]	I	oral, visual, kinesthetic (listening/speaking/writing/ drawing)	paper with map and word, pencil, colored pencils	Children are asked to complete the map by writing and/or drawing anything that they relate to the target word; After, each child is prompted to tell the group one of the things they related to the target word and why.
Escucha con atención [listen carefully]	G	oral with visual aid, tactile (listening/ speaking) (manipulating pieces)	paper with definitions or blackboard, and cards with 'smileys'	Trainer reads short contexts (paragraph or dialogue) and children are supposed to pay attention and listen; After, using smileys, children are asked if the target word fits in that context or not and why.
Dibujando mis experiencias [drawing my experiences]	I	oral, visual, kinesthetic (listening/speaking/writing/ drawing)	paper and colored pencils	Children are asked to draw one experience that they had with the target word; Then, children exchange their drawings; At last, each child is asked to tell the group what he/she thinks the depicted experience of the colleague is about using the target word.
Historieta [comic strip]	G	Oral with visual aid (listening/speaking)	paper with comic strips	In groups of two, children get a comic strip and based on it they are supposed to tell a story using the target word.
1+1=?	I	oral with visual aid (listening/speaking/writing)	paper with activity, pencil	Children are asked to choose two words of the day, and then make up a short story or sentence in which the two words come up/ are combined; After, each child is asked to tell the group about it.
El eslabón perdido [the missing link]	G/I	oral with visual aid (listening/speaking/writing)	paper with activity, pencil	Trainer reads a story following some pre-set instructions; The children are asked to participate accordingly (complete the blanks with the target words, answer questions about the text, summarize the story, give the story a title).

Note. Mode: G = group activity; I = individual activity.

Figure 14 show an overview of all the tasks in the context training group and their main objectives.

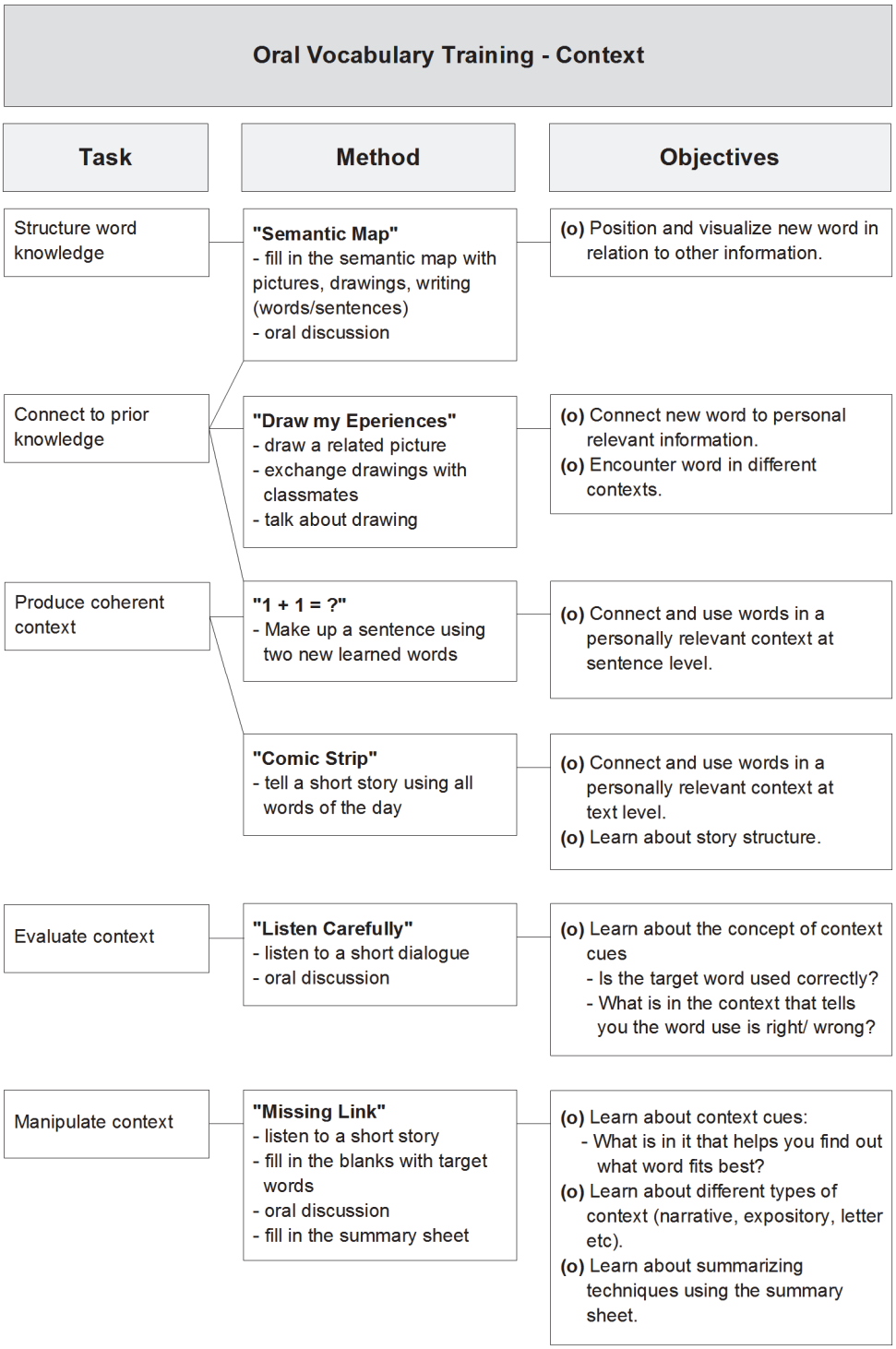

Figure 14. Overview of tasks and main objectives in the context training group.

For both the definition and the context training methods, in each session just one of the activities listed for Part II was used to teach the word of the day. The sequence of activities followed the order pictured in the Figures 8 and 14 and the cycle was repeated until the end of the intervention.

3.4. Behavior management and motivational strategies

As part of the training, assistants were advised about how to deal with disciplinary problems. In this study, problem behaviors were considered the ones that caused disruption in teaching by moving students' attention off the tasks and so compromising learning, such as not to be able to sit still and listen to instructions, not to be able to wait for his/her turn, not to be able to stay focused on the task until its end, to refuse participating in an activity, to incite others not to participate, to behave in order to seek attention from others and disrupt their workflow, to leave the class without permission, and to resist or disregard the trainer's authority.

Based on the project researchers' background in psychology and teaching experience, as well as relevant literature (Bluestein, 2011; Pirangelo & Giuliani, 2011), the following strategies for improving behavior in class were considered:

- *Establish ground rules of behavior:* Rules should be realistic and should be linked to a conversation to have a better impact. Have them reflect about their own behavior and try to explain why they behave that way.
- *Delegate:* Some students engage in disruptive behaviors due to boredom, mostly because they are faster than others in finishing the activities, or due to difficulties in understanding or solving an exercise. In the first case, involving students in simple organizational tasks and giving them responsibilities can help. If a student is

experiencing difficulties, explain the task again or ask another student who has already finished to help him/her.

- *Praise and encourage:* Make positive learning experiences possible. Do not label students negatively or otherwise and focus on the appropriate and positive behaviors.
- *Work hard to create a positive atmosphere:* Especially for children with family and/or social problems, it is important to make them feel safe. Do not let discussions with students escalate. Back off if necessary and keep a calm voice. Use alternative strategies to signal that "silence" is now required, for example, a musical instrument, instead of having to raise your voice. If it is necessary to talk to a student, do it privately and not in front of the whole class. Removing the context can help parties to calm down. Try to identify the "leader" of the group. If you can manage his behavior, others will most probably follow.
- *Practice what you preach:* If you want hardworking, good tempered and respectful students, then be it yourself.

According to assistants' feedbacks about the first sessions, the mentioned strategies were not enough to create an optimal learning atmosphere, at least not as fast as needed, when considering the intervention's short duration. As a detailed analysis of each case would have gone beyond the scope of the project, only brief observations of individuals and class dynamics were performed by the project researchers.

Based on these observations, additional behavior management and motivational strategies were introduced from session seven onwards in order to try to minimize the negative effects on learning outcomes. First, in collaboration with the trainers, a list of behavior ground rules was established in written form for the children (Figure 15). The list was then printed out

in form of a poster and trainers were instructed to have it hanging on the wall or blackboard in all subsequent sessions.

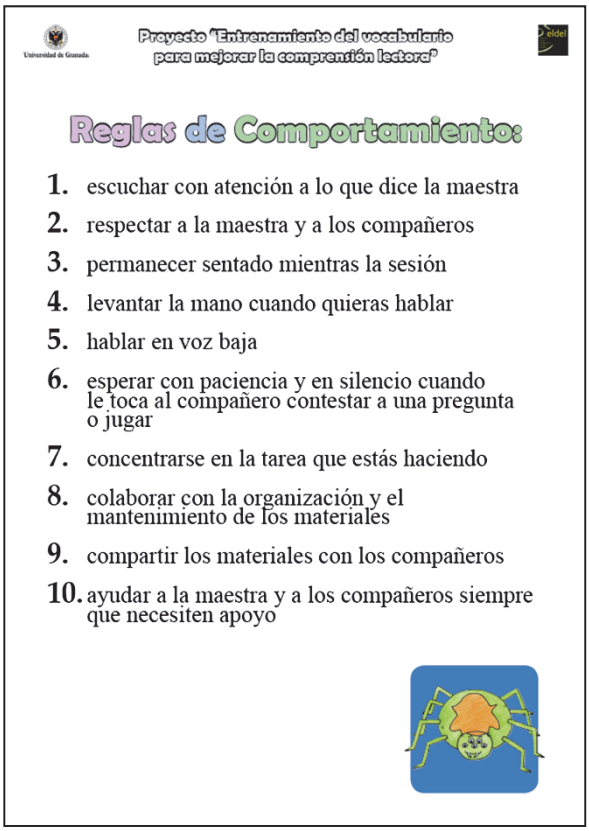

Figure 15. "Behavior Ground Rules."

Additionally, extrinsic motivational strategies were implemented to try to keep children's interest. A "behavior passport" was created in which students could collect stickers won after each session if he/she was compliant to the behavioral rules (Figure 16). Consistent with the original behavioral and motivational strategies listed above, before getting the stickers students were asked individually if they thought they have behaved well in class and if not, what rule they thought was broken and why they thought they behaved that way.

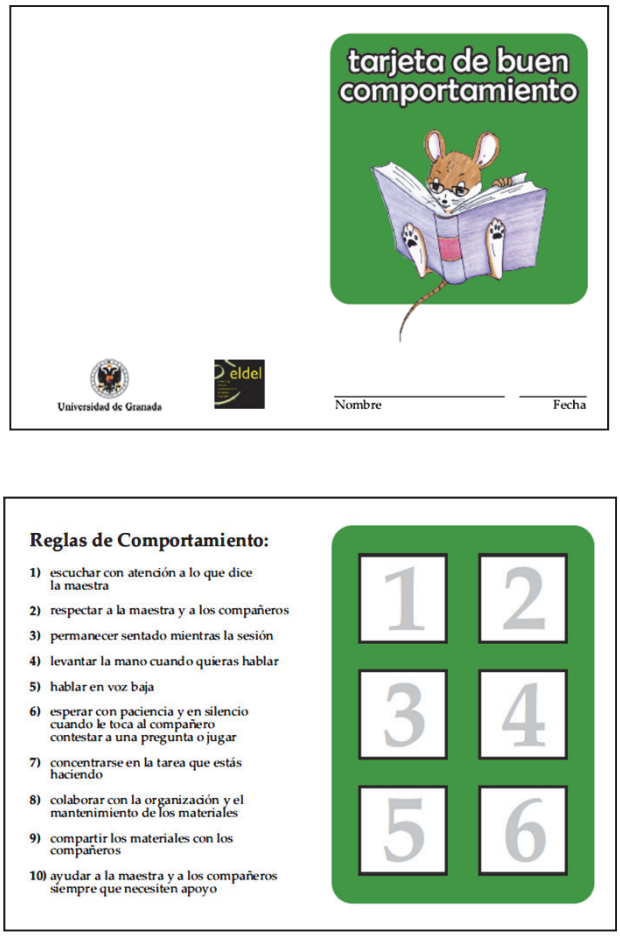

Figure 16. "Behavior Passport."

Also, a class level sticker was awarded at the end of each session to the whole group – green for "appropriate", yellow for "regular", and red for "inappropriate" behaviors (Figure 17). This was an attempt to create a group motivation, in which individual members try to motivate each other to behave, in order to get the best group behavior evaluation.

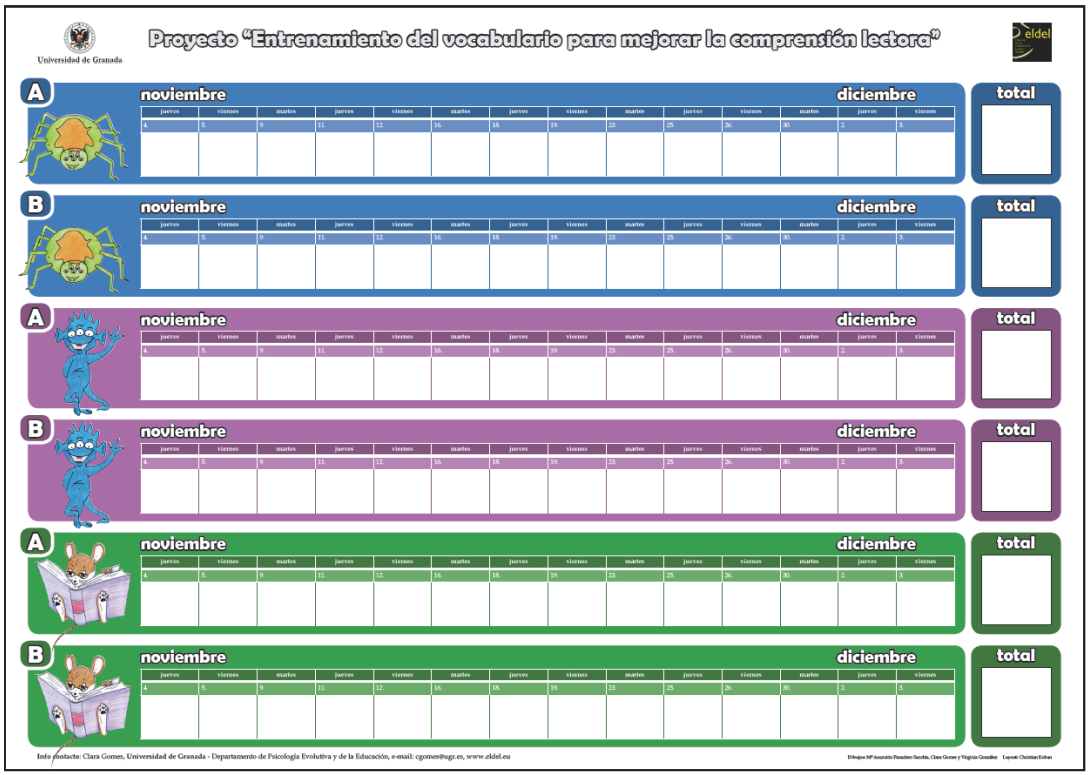

Figure 17. "Class Behavior Plan."

For the most difficult cases, in which none of the strategies would work and massive disruption of teaching would take place, trainers were allowed to give children a "time out," that is, the child would be sent to his/her teacher or school director and have five minutes to contemplate about his/her behavior.

3.5. Data collection reliability and compliance to training methods

The same nine research assistants who performed the pre-, post-, and follow-up evaluations (as evaluators) also delivered the seven-week training program (as trainers). All assistants received specific training for both the evaluation and intervention sessions. During the evaluation periods and throughout the intervention, one investigator was always present in one of the three schools to support the assistants and give them feedback about their work.

Training sessions for the evaluations were held for all research assistants together and it additionally included written material with information about planning, schedules, research ethics, and the instruments' application rules and answer sheets. As each evaluator participated in both intervention and evaluation sessions, in order to avoid bias at post-test, trainers did not evaluate the children they taught in the intervention sessions.

In contrast, training sessions for the intervention were held for assistants of each intervention method and control group separately to avoid cross contamination. The training also included written material with a short summary of the main ideas of the project, research ethics, general instructions for the intervention program, a plan of the activities including a description of each task (objective, duration, materials needed, procedure), as well as instructions on how to fill in session protocols.

Session protocols were completed by the trainers after each session to control for training method compliance (content fidelity). It included a description of what activities were performed during a particular session, how much time each of the activities took, and additional comments about the behavior of the children and other incidents or interruptions.

As an additional measure of integrity, structured observation protocols were filled out by a trained third-party observer (quality of delivery) (Appendix 4). Due to resources and time constraints, only a randomly selected number of sessions were observed.

In order to offer ongoing support to the trainers during the implementation of the intervention, meetings with all assistants were performed on a regular basis. Just as in the initial training sessions, separate meetings were held for the assistants from each teaching method to avoid contamination. In these meetings, assistants could exchange experiences and discuss any problems encountered in the sessions in relation to using the materials and in dealing with children's behaviors.

4. RESEARCH QUESTIONS

Considering the available evidence about vocabulary intervention for English-speaking elementary school children and the theory-driven methods chosen in this work, four main research questions were formulated to be analyzed in this thesis:

1) **Were the two methods of explicit, rich instruction (definition and context) more effective in teaching children the target word meanings compared to the control group?**

   Even though the reading aloud activity in the control group could promote some incidental word learning, this kind of learning happens in smaller increments compared to rich instruction (Nagy & Herman, 1987). Therefore, significantly higher levels of knowledge for taught words were expected for children in both training groups compared to the children in the control group immediately after the intervention as well as at the follow-up assessment five months later. Moreover, both rich instruction methods were expected to be equally effective in teaching word meanings. Consequently, no statistically significant differences between the training groups were expected at either time point.

2) **Did any of the training methods (definition, context) show learning transfer effects to words not taught (control words)?**

   For control words, there are three aspects of the intervention methods to be considered that could potentially promote learning transfer effects. The first alludes to the characteristics of word knowledge in relation to its structured nature and inter- and intra-relatedness. This would concern both training groups.

   Second, children in the context group, but not in the definition group, would additionally profit from encountering words embedded in stories. In particular, the activities

incorporated in the core intervention of the context group explicitly dealt with relations among words and between taught words and background knowledge. Thus, for these children, being exposed to a larger number of words in stories, and explicitly eliciting related word knowledge could have facilitated incidental learning of additional words not taught.

Third, both training methods were aimed at explicitly directing children's attention to manipulating, learning, and thinking about words in different ways. This rich instruction should indirectly foster children's word awareness, by making children more curious or more attentive to the words and world around them, and potentially increase word learning in situations outside of the intervention. As there is little evidence about the nature and size of word awareness effects on vocabulary learning and about the more adequate methods of how to foster this ability (Elleman et al., 2009), no exact expectations of the outcome were established. Nevertheless, the effect of word awareness combined with the effects of encountering words in stories and explicitly eliciting word relations, as it was the case in the context group, were expected to promote significantly stronger learning of items not taught in the intervention. Consequently, larger effects were anticipated for the context group versus the definition and the control groups at both post-tests.

3) Were the effects of the definition and context methods on word knowledge and awareness robust enough to show increases in performance in standardized tests of receptive and expressive vocabulary?

In this study, none of the words found in the standardized measures of vocabulary knowledge were explicitly taught to the children nor were children intentionally exposed to them. Thus, just like the rational for the items not taught explained in research question 2 for the items not taught, changes in these measures are only feasible if there are strong theoretical reasons to believe that the interventions had broader effects, in this case either

fostered by the assumed structured characteristic of word knowledge or by an enhancement of children's word awareness, or a combination of the two. Accordingly, it was hypothesized that if the effects of the rich instruction methods were strong enough in these regards, both training groups would show statistically significant gains in the standardized measures of receptive and expressive vocabulary at both post-tests, but that the control group would not.

4) **Were the effects of the definition and context methods on word knowledge and awareness robust enough to show increases in performance in the standardized test of reading comprehension?**

As per the standardized vocabulary measures, improvement in reading comprehension is only feasible if there is a theoretical reason linking increases in vocabulary to increases in comprehension. As mentioned previously, high correlations between vocabulary and reading comprehension have been repeatedly reported in the literature (Baumann, 2009). Moreover, there are theoretical accounts, which pose that this correlation between vocabulary and reading comprehension can be partially explained by metalinguistic awareness (Nagy, 2007). Thus, if the effects of the training methods on word knowledge and word awareness were strong enough, both training groups might show statistically significant gains in reading comprehension, compared to the control group. The expectation for such an effect in reading comprehension would be greater if a similar effect were to be found on the standardized tests of vocabulary knowledge. A possible advantage for the children in the context group was expected, as activities allowed extra experience in encountering and manipulating words in text passages and stories (Stahl & Fairbanks, 1986; Nash & Snowling, 2006).

Given that the schools participating in the study were located in predominantly low SES areas, the expectation was that the majority of children participating in the study would come from low SES backgrounds. However, the pre-test data revealed an approximately even split between low and middle SES backgrounds, as per definitions of low and middle SES used in this work (pp. 135-136). This enabled us to explore a fifth, unplanned research question.

5) **Did SES influence the learning of words in each group and/or performance in the standardized tests?**

In accordance with the literature (Hart & Risley, 2003), children from low SES backgrounds were expected to show statistically significant lower performance in the custom measure of knowledge of taught and control words, as well as in the standardized measures of receptive and expressive vocabulary at pre-test in comparison to middle SES children. Additionally, even though children starting at lower levels are usually not able to catch up with children who have a language head start (Chall, 1987; Marulis & Neuman, 2010; Stanovich, 1986), it was hoped that the difference in vocabulary knowledge between low and middle SES children would become smaller in the rich instructional groups. In comparison, the expectation was that any advantage shown by the middle SES children in the control group would probably be maintained over the course of the study.

5. METHOD

This study was approved by the project's ethics committee. Signed participation forms were received from the principals of all three schools who participated in this study (Appendix 5). Data was only collected from children who had returned signed parental informed consent forms (Appendix 6).

5.1. Recruitment of schools and description of participants

When selecting schools to participate in the study, preference was given to schools that served mainly families with low socio-economic status. Additionally, schools that had parallel classes, that is, more than one third-grade class being taught per school year, were favored, as these could provide a greater number of students. The final selection of the schools was based on the opinion of experts from the educational system that had experience working directly in the neighborhoods.

The four selected schools were contacted six months prior to the beginning of the study and a meeting with the directors and educational counselors at each school was scheduled, in order to present the intervention project. Immediately after the summer break, which is the start of the new academic year in Spain, schools were contacted again and, following the principles and rules of the Research Ethics, an informed consent form was signed by the school directors and children's parents before the beginning of the study. The consent form included a summary about the project and its goals, and reassured the anonymity of the participants and the confidential handling of the collected data (Appendix 6). Unfortunately, one school withdrew from the study before data collection commenced explaining that they would no longer be able to meet the time and space requirements as initially agreed. The loss of this school had quite an impact on the study. Originally, the study was designed to include a third training method based

on word morphology, similar to the concepts and ideas of Nunes & Bryant (2006). However, the diminished statistical power due to the reduction in the number of children meant that retaining three training groups, plus the control group, was not feasible. This led to the decision of abandoning this third training condition.

The study was intended to have high external validity that potentially better captures the reality in the classrooms as well as to adhere to inclusive educational practices. For these reasons, no screening procedure was performed apart from the grade constraint. Thus, all children from the five existing third grade classes participated in the intervention. The final sample consisted of 100 third-graders, 58 boys and 42 girls with a mean age of 8 years and 2 months (range 7;5 – 9;6) at the commencement of the study. Ninety-six children were native Spanish-speakers, while the remaining four were Spanish language learners (Arabic native speakers), that is, Spanish was not their mother-language and not the main language spoken at home. Three children were receiving extra tutoring classes in specific subjects as part of the program "alumnos con necesidades específicas de apoyo educativo" [students with specific educational support needs] and two children were attending the special education curriculum program "alumnos con necesidad de educación especial" [students with special education needs]. The remaining 95 children were attending the regular school curriculum program.

To assess the socio-economic status of the children's families, a background questionnaire was sent home to the parents (Appendix 7). Low-SES families were defined as those with low level of mother's education (completed obligatory school years, which correspond to the "educación primaria obligatoria" [compulsory basic education] from 6 to 12 years old and completed or incomplete "educación secundaria obligatoria" [compulsory secondary education] from 13 to 16 years old) and low family income (less than the minimum wage equivalent to €8,866 per year). Ninety-three of the 100 questionnaires sent to the parents were returned. Based on the returned questionnaires, 56 families fulfilled the criteria of low

socio-economic status (SES) while the remaining 37 families were classified as belonging to middle class. The questionnaire also included questions about children's home literacy environment (HLE).

5.2. Design and measures

Children within classes were randomly assigned to one of the two training groups, or to the control group. Following this random allocation, due to the higher number of boys in some classes, some girls were randomly selected to be reassigned to ensure that both genders were represented in all groups. Also, for ethical reasons, we ensured that the four Spanish language learners were randomly allocated to one of the two experimental groups only (two children in the context and two in the definition group). Thus the final allocations were definition group (n = 33; 13 girls), context group (n = 34; 15 girls) and control group (n = 33; 14 girls). If the training methods were effective, medium to large effects for knowledge of the taught words were expected to be found (see meta-analysis by Elleman et al., 2009). A priori power calculations using G*Power (Faul, Erdfelder, Lang, & Buchner, 2007) indicated that the overall size of the sample and the well-balanced nature of the design ensured sufficient statistical power was present for the planned group main comparisons and the expected effect size in the vocabulary knowledge of taught words (with power set to 0.8, G*Power indicated the sample size was sufficient to detect effects of $f = 0.32$, equivalent to $\eta^2 = 0.09$ and to Cohen's $d = 0.64$).

The research assistants chosen to participate in the study as evaluators and trainers were recruited through interviews. As selection criteria, they were to be students in their last year of the university program "Teacher Education" and, preferably, have some experience in working with or teaching children at elementary school age. Nine research assistants were finally selected and randomly assigned to the training methods. Even though some trainers held sessions with more than one group, the sessions were within the same method to avoid

contamination. Figure 18 shows the random distribution of children and research assistants into the groups.

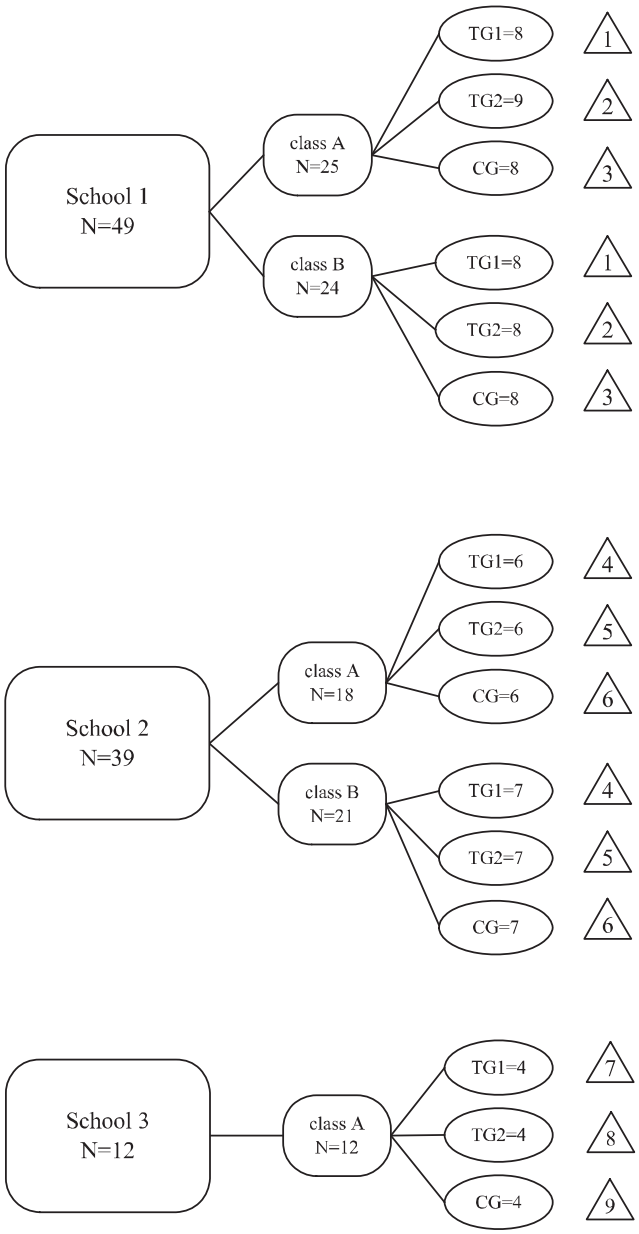

Figure 18. Random distribution of children and trainers into the training groups (TG1 and TG2) and the control group (CG). Triangles with numbers represent the nine trainers recruited.

Except for the reading comprehension test and the reading motivation questionnaire, which allow group testing, children were tested individually within the schools in multiple sessions no longer than 30 minutes each. Data were collected at three time points. The baseline evaluation (pre-test) took place at the beginning of the school year in September and the following measures were taken:

Receptive vocabulary. The Spanish version of the standardized Peabody Picture Vocabulary Test (PPVT-III; Dunn et al., 2006) was used. In this test, the child selects one of four pictures to match a spoken word in meaning. Unlike in English, the Spanish version of the PPVT-III does not have two parallel forms, so children were tested at all time points with the same items.

Expressive vocabulary. The standardized Vocabulary subtest from the Spanish version of the Wechsler Intelligence Scale for Children IV (WISC-IV; Escala de Inteligencia para Niños-IV (Corral, Arribas, Santamaría, Sueiro, & Pereña, 2005) was used. In this task, the child was required to define orally a list of words.

Vocabulary knowledge of taught and control words (VK; Appendix 8). To test the direct and specific effects of the teaching methods, a self-report measure of vocabulary knowledge (VK) was used to estimate children's knowledge of taught and control words. Wesche and Paribakht (1996) tested a similar instrument and found it to be useful in quantifying gradual word knowledge changes. The VK test contained 30 words (15 words selected at random from the 60 taught words in the training methods, plus the 15 untaught control words). The final list of 30 words was the same for all children. Analogue to the vocabulary subtest from WISC-IV and consistent with the theoretical concept of incremental word knowledge (Beck et al., 2002; Cronbach, 1942; Dale, 1965; Nagy & Scott, 2000), the VK task consisted of asking children to explain orally the meaning of the words by asking a series of questions. For each word, it started with question (1) "Have you ever heard the word ___?" If child answered "yes", then question

(2) “What does it mean?” would follow. Depending on the answer given at (2), different questions would be stated. For example, for the word ‘ocultar’ [to hide], in case the child gave a definition repeating the word to be defined, e.g., “ocultar un objeto” [to hide an object], the next question was (3a) “Can you try to explain what ‘ocultar’ means using a different word?” In contrast, if children gave a definition using a synonym or general description, e.g., “esconder algo” [to keep something out of sight], the following question was (3b) “Can you also give me an example using the word ‘ocultar’?”, e.g., “oculto una lámpara para que mi madre no la vea” [I hide a lamp, so that my mom does not see it]. In cases of words with more than one meaning, children were additionally asked (4) “You know that some words have more than one meaning, right? So, do you know another meaning for ___?” Children’s answers for each of the words were written down by the examiner and were later scored by two independent raters using a scale from zero to four points according to their correctness and quality (Table 6). As reference for correctness and quality judgment, children’s answers were compared to the definitions of three age-appropriate pre-selected dictionaries (Diccionario Anaya Lengua Española, 2009; Diccionario Escolar de la Lengua Española, 2009; Nuevo Diccionario Básico de la Lengua Española, 2005). Inter-rater reliability at pre-test ($\kappa = 0.79$, $p < .001$), post-test 1 ($\kappa = 0.73$, $p < .001$), and post-test 2 ($\kappa = 0.76$, $p < .001$) pointed to an acceptable scoring classification system (Cohen, 1960; Fleiss & Cohen, 1973). Also the criterion-related validity analyses of the instrument showed acceptable results, with correlations at pre-test between the VK and the WISC-IV Vocabulary Subtest, $r = .59$, $p < .001$, and between the VK and the PPVT-III, $r = .57$, $p < .001$ (Cohen, 1988).

Table 6. *Evaluation Scale to Score Children's Answers in the Customized Measure of Knowledge of Taught and Control Words (VK)*

Score	Description of equivalent word knowledge	Example of answer
0	Has never heard the word; No knowledge about the word.	"I have never heard this word before."/ "I do not know."/ "It does not sound familiar to me."
1	Has heard the word, but does not know what it means; Has false concept of word; Children expressed themselves in a manner in which the meaning/intention was not clear.	"I think I have heard it before." / "Yes, I have heard this word, but I do not know what it means."/ "I do not know what it is."/ "I cannot explain it."/ "I do not know how to explain it."
2	Has heard the word; General concept of positive/negative; Superficial or incomplete knowledge; Cannot give a general definition using synonym or other words to explain the word; Gives an example repeating the word without additional information, which would explicitly signal meaning knowledge; Definition AND example, but only one is correct (contradictory).	"It has to do with…"/ "I am not sure, but maybe …"/ *amenaza* [threat]: "Someone threatens someone."
3	Has heard the word; Knowledge restricted to a context/ strongly context bound; Either a correct general definition OR a correct example which includes explicit information that demonstrates meaning knowledge.	*Interminable* [never ending]: "A story that never ends." /*superar* [to surpass]: "If someone gets points in a game and someone else gets higher points."
4	Has heard the word; Broader and richer knowledge; Definition AND example and both are correct (without contradiction).	*Vértigo* [vertigo, dizziness] "Afraid of heights, for example, climb a mountain and be afraid of falling or something." /*pendiente* [[1]pending, [2]earring, [3]slope, [4]to look after, [5]to pay attention]: "pay attention to something, and earring, for example, this child is paying attention in class or she wears beautiful earrings."

Reading comprehension. The standardized multiple-choice test Comprensión Lectora de Complejidad Lingüística Progresiva (CLP; Alliende, Condemarin, & Milic, 1991) was used. The third-grade version with two parallel forms takes around 30 minutes and consists of 21 items organized in four main tasks that address comprehension at sentence and short text levels. The texts consist of a group of sentences connected by a common topic and characterized by simple grammatical structures and topics common to children's experiences at this age. The tasks involve interpreting the meaning of a sentence by marking another sentence that has an equivalent meaning, demonstrating the literal understanding of a short text passage by identifying the main characters and their actions, or showing inferential understanding of concepts not explicitly mentioned in the text by marking statements about the text as 'true' or 'false'. Form A and Form B were used to control for test-retest effects.

Word Reading. To measure lexical word reading and sub-lexical decoding abilities two subtasks of the reading test Batería de Evaluación de los Procesos Lectores (PROLEC-R; Cuetos, Rodríguez, Ruano, & Arribas, 2007) were used. These tasks require the child to read aloud a list of words and pseudowords, with both accuracy and total reading time used as measures of proficiency.

Listening comprehension. This was measured using a translated version of the Token Test (DiSimoni, 1978). In this test, the examiner reads a sentence that contains one or more commands and the child is required to move or touch specific colored geometric pieces on the table based on these commands.

Working memory. The Digits subtest from the Spanish version of the WISC-IV (Corral et al., 2005) was used to assess working memory abilities. Both the forwards and backwards subtasks were used.

Attention. The Symbols subtest from the Spanish version of the WISC-IV (Corral et al., 2005) was used to assess attention. The child is required to look through a sequence of symbols and indicate if they are the same as the symbol shown at the start of each trial.

Non-verbal IQ. The Spanish version of the Raven Standard Progressive Matrices test (SPM; Raven, Court, & Raven, 1996) was used to assess children non-verbal IQ.

Reading Motivation. A motivation to read questionnaire was filled in by the children. The 20-item questionnaire translated from the English original Motivation to Read Profile Reading Survey (MRP; Gambrell, Palmer, Codling, & Mazzoni, 1996) for the project includes an overall and two subscales *value of reading* and *self-concept* as a reader scores. Translation and back-translation process involved three bilingual Spanish-English speakers. Analysis indicated an acceptable internal reliability of the Spanish version of the 'value of reading' and 'self-concept' scales, *Cronbach's* α = .702 and .625, respectively (Kline, 1999).

The first post-test evaluation at the end of the intervention (post-test 1) was performed immediately after the intervention was finished in December. Due to organizational and time resources only measures of vocabulary, reading comprehension, and motivation were taken. Finally, to check for long-term effects, a follow-up evaluation (post-test 2) was performed five months later at the end of third-grade in May. At post-test 2, vocabulary, reading comprehension, word and pseudoword reading, and listening comprehension were assessed. Table 7 shows a summary of the measures taken at all three time points.

Table 7. *Measures Taken at Pre-Test, Post-Test 1, and Post-Test 2.*

Measures	Pre-Test	Post-Test 1	Post-Test 2
VK of taught and control words	X	X	X
PPVT-III	X	X	X
WISC-IV - Vocabulary	X	X	X
CLP[a]	X	X	X
PROLEC-R word reading	X		X
PROLEC-R pseudoword reading	X		X
Token	X		X
Raven - SPM	X		
WISC-IV - Digits	X		
WISC-IV – Symbols	X		
MRP[a]	X	X	
Parents' questionnaire (SES and HLE)	X		

Note. [a] group testing.

6. RESULTS

All analyses of the data presented in this work were performed using the software SPSS Statistics for Windows, Version 17.0, and the open source program "R" for Windows Version 2.15.0 (R Development Core Team, 2012).

6.1. Preliminary descriptive statistical analyses

6.1.1. Missing cases

A missing values analysis was performed. Most of the missing data was due to insufficient information to allow SES to be calculated. Consequently, SES had 7% of missing values, although this was the only variable that had more than 5% missing values, which is the generally accepted limit (Schafer, 1999). Nonetheless, the Little's MCAR test showed that missing values of all variables were missing completely at random, $\chi^2(256) = 286.06$, $p = .095$. This means that the missing patterns of the variables, including SES, do not affect the data in a systematic way.

6.1.2. Outliers

After plotting all variables, the following extreme outliers all with low performance in comparison with the mean were found: case 98 in the Token Test at post-test 2, cases 44 and 63 in the PROLEC-R-word reading test at pre-test, and cases 44 and 13 in the PROLEC-R-word reading test at pre-test and PROLEC-R-pseudoword reading test at post-test 2. Case 98 is a student taking the specific tutoring program. The child's performance is generally low in all tests, and especially low in the test of oral language comprehension. According to the data and observations, the case 44 is a student with low motivation and generally low scores in all tests.

Also, the questionnaire sent to the child's parents was not returned. Case 63 appears to be a below average word reader, with average performance in other tests. Case 13 is a child diagnosed with Attention-Deficit-Hyperactivity-Disorder, who has a very poor reading performance. As this study was designed to be inclusive in order to picture the reality of the school environment, all children were invited to participate, independent of their status. It is important to note that, in the tests of reading words and reading comprehension, the ID 13 was given more support from the examiner in comparison to the standard procedure.

6.1.3. Interval scale

According to the theoretical background used for this work, word knowledge is seen as incremental (Beck et al., 2002; Cronbach, 1942; Dale, 1965; Nagy & Scott, 2000). In designing the VK test, the intention was to identify the amount of knowledge children possessed for each word, both before and after the intervention. Thus a point scale from zero to four was created to estimate the correctness of the answers. The points in the scale were designed to represent real knowledge of the words, commencing from no knowledge at point zero, with incrementally more knowledge at each of the four subsequent levels. Strictly speaking, these points would not be an interval continuous scale that allows a linear statistical model to be used. Nevertheless, it is common practice in psychology to treat ordered discrete variables with multiple categories as continuous in nature, and this was the procedure adopted here.

Zero points were given when the child said "I have no idea" / "I don't know this word" / "I have never heard it." One point was given when the child said "I have heard it, but I don't know what it means" / "I have heard it, but I can't remember what it means," and also when the child attempted to define the word independently of how correct the definition was, for example, by saying "I don't know exactly, but does it have something to do with…?," "I don't know exactly, but it is a good/bad thing" (knowledge of negative/ positive connotation).

Theoretically, this was intended to gather information about words that are represented in the mental lexicon, but to which the child has so far no semantic knowledge or for which incomplete, unstable knowledge is attached. Although we tried to be as precise and objective as possible during testing, children's answers are not always so. Sometimes they know something, but cannot express it. Other times they know, but they do not want to tell you and sometimes they do not know, but they say they do. In this study, we concluded that if a child was awarded two, three, or four points, he/she knew the word to that level. If a child was awarded zero or one point, we inferred that he/she did not know the word or the knowledge of the word was very superficial and unstable. We did try to observe body language, motivation and attitude during testing, but the real reason for no answer or a partial answer remains only indirectly accessible with this methodology. Notwithstanding the uncertainty around the values zero and one, the VK test scale was considered and treated as numerical and interval scaled.

6.1.4. Fidelity measures

Fidelity data analysis involved considering three main points: attendance, content fidelity, and quality of delivery.

As to children's attendance rates, because the vocabulary training sessions were provided during normal school times, the rates were just as high as the usual school attendance.

In regard to content fidelity, the protocols filled out by the trainers were analyzed weekly by the main project researcher as a formative evaluation of study implementation. This evaluation involved comparing what was taught (words, activities) with what was planned for each of the sessions according to the trainers' instruction materials. From this data, we could identify disruptive behavioral issues as being the trigger of most of the deviations from the planned activities. This meant that some activities were being skipped or had less time dedicated

to them than planned, especially in Part I (warm-up) and Part III (recall game) of the training. It is important to point out that the great majority of the deviations did not concern Part II of the training, which was the core of the training activities. In response to this issue, and as mentioned previously on pages 119 to 122, additional training was given to the research assistants and new strategies were put in place in order to try to motivate children to be more cooperative during the sessions.

Finally, data from a randomly selected sessions observed by a third-party observer were used to check the quality with which the trainers were delivering the material. Related to the previous point, the major issue identified was the unpreparedness of the trainers to deal with deviant and disruptive behavior in the sessions. Trainers spent a large amount of time in addressing behavioral issues and the interruptions were negatively affecting the learning environment.

In sum, based on the discussed data, it was concluded that the core part of the program was delivered to a satisfactory level. Nevertheless, due to behavioral issues, the potentially beneficial effects of the training, especially in regard to the practice and recall opportunities of the training, may have been diminished.

6.1.5. Description of variables

Table 8 contains the means, standard deviations, medians, and ranges for all the variables at all time points. For the variables PROLEC-R Word and Pseudoword reading, a *z*-composite score (with M=0 and SD=1) was calculated using the time needed to read the list of words/pseudowords and the number of errors made. In this case, positive values indicate a poorer performance (more time needed and more errors done).

Table 8. *Mean, Standard Deviation, Median, and Range for All Variables at Pre-Test, Post-Test 1, and Post-Test 2*

	Pre-test				Post-test 1				Post-test 2			
Variables	*M*	*SD*	Median	Range	*M*	*SD*	Median	Range	*M*	*SD*	Median	Range
VK – Taught Words	21.4	7.52	22.0	2.0-37.0	27.0	7.79	28. 0	5.0-41.0	32.5	8.95	34.0	10.0-50.0
VK – Control Words	16.1	6.93	17.0	1.0-32.0	19.2	6.67	21.0	4.0-34.0	23.5	8.32	23.0	7.0-45.0
PPVT-III	90.2	18.46	92.0	42.0-141.0	95.8	19.29	96.5	48.0-145.0	102.3	19.36	102.0	58.0-154.0
WISC-IV - Vocabulary	12.9	6.19	12.0	2.0-28.0	13.8	5.85	13.0	1.0-27.0	16.4	6.88	16.0	2.0-38.0
PROLEC-R Word[a]	-.019	.794	-.238	-.931-2.596					.006	.861	-.234	-1.097-2.259
PROLEC-R Pseudoword[a]	-.002	.813	-.158	-1.097-2.259					.010	.807	-.170	-.953-5.666
CLP	12.7	4.37	13.0	0.0-21.0	13.9	3.44	15.0	4.0-20.0	14.8	3.26	15.0	3.0-21.0
Token Test	46.0	6.48	46.0	26.0-57.0					50.6	5.71	52.0	25.0-59.0
RAVEN	21.1	6.88	20.0	8.0-43.0								
WISC-IV - Digits	12.5	2.29	12.0	7.0-19.0								
WISC-IV - Symbols	18.4	8.54	18.0	0.0-43.0								
MRP	63.4	7.46	64.0	40.6-80.0	63.6	7.99	64.0	43.0-80.0				
HLE – Belief	47.7	4.37	48.5	37.5-56.0								
HLE – Practices	16.5	3.69	17.0	8.0-25.0								

Note. VK = Test of Vocabulary Knowledge; PPVT-III = Peabody Picture Vocabulary Test III; WISC-IV = Wechsler Intelligence Scale IV; PROLEC-R = Batería de Evaluación de los Procesos Lectores, Revisada; CLP = Prueba de Comprensión Lectora de Complejidad Lingüística Progresiva; MRP = Motivation to Read Profile Reading Survey; HLM = Home literacy environment questionnaire;

[a] *z*-composite score (mean of speed and number of errors; positive values indicate worse performance) with $M = 0$, $SD = 1$.

Table 9 contains the bivariate correlations for all the variables at pre-test. Due to the non-normal distribution of some of the variables, Spearman's correlations are reported. For ease of interpretation, the correlations for the PROLEC-R Word and Pseudoword reading tests were reflected (higher scores indicate better performance).

As the variables PROLEC-R, Token, Raven, WISC-IV Digits, WISC-IV Symbols, MRP, and HLE are not part of the main analysis done for this work, they were only included in the description analysis, but were not considered for the further inferential statistical analysis.

Table 9. *Spearman's Rho Correlation for All Variables at Pre-Test.*

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. VK – Taught Words													
2. VK – Control Words	.83***												
3. PPVT-III	.57***	.53***											
4. WISC-IV - Vocabulary	.59***	.51***	.53***										
5. PROLEC-R Pseudow[a]	.13	.08	.25*	.16									
6. PROLEC-R Word[a]	.24*	.14	.24*	.22*	.84***								
7. CLP	.45***	.37***	.50***	.42***	.48***	.46***							
8. Token Test	.32**	.32**	.44***	.36**	.35**	.30**	.36**						
9. RAVEN	.33**	.32**	.19	.42***	.14	.18	.22*	.23*					
10. WISC-IV - Digits	.24*	.25*	.29**	.25*	.34**	.34**	.43***	.43***	.33**				
11. WISC-IV - Symbols	.12	.08	.22*	.17	.16	.20	.24*	.28**	.22*	.22*			
12. MRP	.07	.00	.31**	.18	.53***	.46***	.44***	.38***	.11	.36**	.15		
13. HLE – Belief	-.09	-.09	-.14	-.17	.18	.18	-.14	.05	-.09	-.05	.14	.13	
14. HLE – Practices	-.05	.04	.13	.09	.04	.04	-.04	.02	.09	-.10	-.16	.12	.26*

Note. VK = customized test of vocabulary knowledge; PPVT-III = Peabody Picture Vocabulary Test III; WISC-IV = Wechsler Intelligence Scale IV; PROLEC-R = Batería de Evaluación de los Procesos Lectores, Revisada; CLP = Prueba de Comprensión Lectora de Complejidad Lingüística Progresiva; MRP = Motivation to Read Profile Reading Survey; HLM = Home literacy environment questionnaire

[a] reflected scores (higher values indicate better performance)

* $p \leq .05$. ** $p < .01$. *** $p < .001$.

6.2. Main inferential statistical analyses

For the analyses of the main research questions a mixed model approach was used, as it allows simultaneous consideration of various factors that could have an effect over participants or word items (Baayen et al., 2008).

Table 10 shows the mean score and range for the variables of interest (vocabulary knowledge and reading comprehension), broken down by time point and group. Omnibus ANOVAs confirmed that there were no significant differences between groups on any of the tasks at pre-test. This is unsurprising given that random allocation was used to assign children to the groups.

Table 10. *Mean (SD) Scores and Ranges for the Variables of Interest, Broken Down by Time Point and Group, Along with the Results of Omnibus ANOVA Analyses Comparing the Group Means at Pre Test*

Measure	Time Point	Definition Group (n =33)		Context Group (n = 34)		Control Group (n = 33)		ANOVA
		Mean (*SD*)	Range	Mean (*SD*)	Range	Mean (*SD*)	Range	p value
Taught Words	Pre-test	20.7 (8.37)	2 – 34	23.2 (6.63)	8 – 34	20.2 (7.34)	8 – 37	.250
	Post-test 1	28.2 (5.87)	10 – 41	29.1 (8.33)	5 – 40	23.4 (7.91)	8 – 35	
	Post-test 2	34.1 (8.14)	16 – 50	33.9 (8.25)	14 – 49	29.7 (9.92)	10 – 48	
Control Words	Pre-test	16.4 (7.19)	1 – 32	16.8 (6.56)	3 – 30	15.1 (7.17)	2 – 28	.636
	Post-test 1	19.9 (5.82)	9 – 34	20.5 (7.01)	5 – 30	17.1 (6.79)	4 – 25	
	Post-test 2	25.8 (8.39)	9 – 45	23.2 (7.72)	10 – 42	21.4 (8.52)	7 – 40	
Receptive Vocabulary	Pre-test	91.9 (20.78)	56 – 141	87.9 (20.39)	42 – 126	90.7 (13.56)	62 – 118	.693
	Post-test 1	96.7 (20.89)	61 – 145	96.6 (19.56)	48 – 142	94.2 (17.79)	54 – 130	
	Post-test 2	105.8 (21.73)	62 – 154	100.5 (18.74)	58 – 135	100.9 (17.64)	69 – 134	
Expressive Vocabulary	Pre-test	12.9 (6.45)	2 – 27	12.7 (6.76)	2 – 28	13.0 (5.47)	6 – 26	.982
	Post-test 1	14.6 (6.80)	2 – 26	13.4 (5.97)	1 – 27	13.3 (4.64)	5 – 24	
	Post-test 2	17.3 (7.27)	5 – 38	15.4 (6.86)	2 – 30	16.6 (6.58)	3 – 32	
Reading Comprehension	Pre-test	12.3 (4.70)	5 – 21	13.2 (4.77)	6 – 21	12.9 (2.95)	7 – 18	.982
	Post-test 1	14.1 (3.37)	3 – 20	13.9 (3.50)	4 – 20	13.7 (3.64)	5 – 19	
	Post-test 2	15.0 (3.09)	7 – 20	14.7 (2.74)	10 – 21	14.5 (3.90)	3 – 19	

Despite the fact that there were no significant group differences at pre-test, the recommended method to assess the relative effectiveness of the two training methods for increasing vocabulary knowledge are mixed design ANCOVAs that take into account pre-test variation between children (Van Breukelen, 2006). Thus, for each analysis reported below there was one between-subjects factor, Group (definition, context, control), and one within-subjects factor, Time (post-test 1, post-test 2), with pre-test scores entered as covariates. The ANCOVA paradigm was implemented as a linear mixed effect model using the lme4 package (Bates, Maechler, Bolker, & Walker, 2015) in the R environment (R Development Core Team). Thus, the reported coefficients (*b*s) represent the estimate of the difference between two groups being compared. Exact *p* values cannot be calculated for these types of analyses and the significance of parameters must be assessed by inspecting the confidence intervals (Bates, 2006). Confidence intervals which contain zero indicate a non-significant parameter – that is, the difference between the two values being compared is not significant. Finally, vocabulary knowledge of the taught and control words was analyzed at the individual item level, rather than at the subject level to simultaneously account for the crossed random effects of participants and items (Baayen et al., 2008). This technique also minimizes the impact of missing data. Accordingly, for the analyses involving the taught and control words the *b* values represent the difference in the mean VK rating scores, *per item*. For other analyses, the *b* values represent the difference in subject means. In summary, in all the analyses that follow, what is being compared is whether there is a significant different between groups on each task, after controlling for pre-test differences.

6.2.1. Primary planned analysis

A summary of the regression coefficients for all analyses can be found in Table 11. Regarding the **first research question**, for the taught words at post-test1 both the definition

group ($b_{definition}$ = 0.31, *SE* = 0.12, 95%CI [0.08, 0.53]) and the context group ($b_{context}$ = 0.40, *SE* = 0.12, 95%CI [0.17, 0.62]) demonstrated significantly more knowledge about the taught words compared to the control group. Furthermore, there was no significant difference between the two training methods (*b* = 0.09, *SE* = 0.11, 95%CI [-0.14, 0.31]), suggesting that both training methods proved equally effective at improving vocabulary knowledge of the taught words. These results are in accordance to the expectations.

Table 11. *Regression Co-Efficients and Confidence Intervals (95% CI) for Models Predicting Knowledge of Taught and Control Words, as well as for Models Predicting Standardized Literacy Measures*

Parameter		Defintion vs Control		Context vs Control		Context vs Definition	
		b	95% CI	*b*	95% CI	*b*	95% CI
Taught Words	Post-test 1	0.31 *	[0.08, 0.53]	0.40 *	[0.17, 0.62]	0.09	[-0.14, 0.31]
	Post-test 2	0.25 *	[0.03, 0.48]	0.17	[-0.05, 0.40]	-0.08	[-0.30, 0.15]
Control Words	Post-test 1	0.19	[-0.01, 0.39]	0.28 *	[0.08, 0.48]	0.10	[-0.10, 0.30]
	Post-test 2	0.25 *	[0.05, 0.45]	0.07	[-0.13, 0.27]	-0.18	[-0.38, 0.02]
Receptive Vocabulary	Post-test 1	-1.02	[-6.98, 4.95]	4.71	[-1.26, 10.60]	5.73	[-0.21, 11.67]
	Post-test 2	1.28	[-4.74, 7.29]	1.72	[-4.25, 7.70]	0.44	[-5.55, 6.44]
Expressive Vocabulary	Post-test 1	1.11	[-1.28, 3.50]	0.77	[-1.62, 3.16]	-0.34	[-2.71, 2.03]
	Post-test 2	0.15	[-2.25, 2.56]	-0.85	[-3.24, 1.54]	-1.01	[-3.39, 1.38]
Reading Comprehension	Post-test 1	0.13	[-1.24, 1.51]	-0.62	[-1.99, 0.75]	-0.76	[-2.14, 0.63]
	Post-test 2	0.12	[-1.28, 1.51]	-0.25	[-1.65, 1.16]	-0.37	[-1.79, 1.06]

Note. * indicates significant differences based on the confidence intervals. To derive the parameters and confidence intervals for the context vs definition column, all models were rerun changing the reference category from the control group to the definition group.

At post-test 2 the definition group but not the context group demonstrated significantly more vocabulary knowledge than the control group ($b_{definiton}$ = 0.25, *SE* = 0.12, 95%CI [0.03, 0.48]; $b_{context}$ = 0.17, *SE* = 0.11, 95%CI [-0.05, 0.40]). Despite this, the difference between the two training methods did not reach significance (*b* = -0.08, *SE* = 0.12, 95%CI [-0.30, 0.15]).

It should be noted that both the covariate of pre-test knowledge, as well as the interaction of pre-test knowledge with Time were significant in these analyses, indicating that children with higher pre-test scores improved more at both post-test 1 and post-test 2 compared to children with lower pre-test scores (and this is also true of all subsequent analyses). This result extends evidence of *Matthew effects*[5] in reading beyond the oft-cited reports among English learners (Stanovich, 1986) and underlines the necessity of controlling for pre-test knowledge.

Turning now to the **second research question** involving the control words, at post-test 1 the context group ($b_{context}$ = 0.28, *SE* = 0.10, 95%CI [0.08, 0.48]) demonstrated significantly more word knowledge than the control group. In contrast, the confidence interval indicates that the difference between definition group and the control group just failed to reach significance ($b_{definition}$ = 0.19, SE = 0.10, 95%CI [-0.01, 0.39]). As for the taught words at post-test 1, for the control words there was no significant difference between the two training methods (*b* = 0.10, *SE* = 0.10, 95%CI [-0.10, 0.30]). At post-test 2 the definition group but not the context group demonstrated significantly more vocabulary knowledge than the control group ($b_{definiton}$ = 0.25, *SE* = 0.10, 95%CI [0.05, 0.45]; $b_{context}$ = 0.07, *SE* = 0.10, 95%CI [-0.13, 0.27]). Nevertheless, the advantage shown by the definition group over the context group just failed to reach significance (*b* = -0.18, *SE* = 0.10, 95%CI [-0.38, 0.02]).

To answer the **third research question**, similar analyses were carried out for the two standardized measures of vocabulary. With respect to receptive vocabulary, there was no effect

[5] This term was inspired by the bible passage according to Matthew "For unto every one that hath shall be given, and he shall have abundance: but from him that hath not shall be taken away even that which he hath" (XXV:29); interpreted by Stanovich (1986, p. 381) as the “rich-get-richer” phenomenon.

of the training methods, either at post-test 1 ($b_{definiton}$ = -1.02, *SE* = 3.04, 95%CI [-6.98, 4.95]; $b_{context}$ = 4.71, *SE* = 3.05, 95%CI [-1.26, 10.96]) or post-test 2 ($b_{definiton}$ = 1.28, *SE* = 3.07, 95%CI [-4.74, 7.29]; $b_{context}$ = 1.72, *SE* = 3.05, 95%CI [-4.25, 7.70]). In fact, the only significant factor in determining later receptive vocabulary knowledge was the covariate pre-test vocabulary knowledge. There were no differences between the two methods either at post-test 1 or post-test 2. Regarding expressive vocabulary, there was no effect of the training methods, either at post-test 1 ($b_{definiton}$ = 1.11, *SE* = 1.22, 95%CI [-1.28, 3.50]; $b_{context}$ = 0.77, *SE* = 1.22, 95%CI [-1.62, 3.16]) or post-test 2 ($b_{definiton}$ = 0.15, *SE* = 1.23, 95%CI [-2.25, 2.56]; $b_{context}$ = -0.85, *SE* = 1.22, 95%CI [-3.24, 1.54]). Again, the only significant factor in determining later expressive vocabulary knowledge was the covariate pre-test vocabulary knowledge, and there were no differences between the two training methods either at post-test 1 or post-test 2.

Finally, for the **fourth research question** concerning reading comprehension, the results were similar to those found for vocabulary - no effect of either training method was found, either at post-test 1 ($b_{definiton}$ = 0.13, *SE* = 3.04, 95%CI [-1.24, 1.51]; $b_{context}$ = -0.62, *SE* = 0.70, 95%CI [-1.99, 0.75]) or post-test 2 ($b_{definiton}$ = 0.12, *SE* = 0.71, 95%CI [-1.28, 1.51]; $b_{context}$ = -0.25, *SE* = 0.72, 95%CI [-1.65, 1.16]). As for the standardized measures of vocabulary, the only significant factor in determining later reading comprehension was the covariate pre-test reading comprehension. There were no differences between the two training methods either at post-test 1 or post-test 2.

6.2.2. Secondary analysis considering SES

In order to address the unplanned **fifth research question**, the above analyses were repeated including **SES** status (low vs medium). Nevertheless, it should be noted that these analyses need to be interpreted with caution as the inclusion of this additional factor meant that the statistical power was reduced to a level such that only large effects would likely be detected.

For the **taught words** at post-test 1, both training methods were effective for the low SES children ($b_{definition}$ = 0.45, *SE* = 0.14, 95%CI [0.18, 0.71]; $b_{context}$ = 0.45, *SE* = 0.16, 95%CI [0.13, 0.77]). In contrast, for the medium SES children, only the context group showed significant more learning compared to the control group ($b_{definition}$ = 0.15, *SE* = 0.15, 95%CI [-0.14, 0.45]; $b_{context}$ = 0.27, *SE* = 0.14, 95%CI [0.01, 0.54]). However, as for the analyses which excluded SES, no significant differences were found between the two training methods when taking SES status into account. (b_{low} = 0.00, *SE* = 0.16, 95%CI [-0.30, 0.31]; b_{medium} = 0.12, *SE* = 0.15, 95%CI [-0.17, 0.41]).

At post-test 2, when SES was taken into account, the significant advantage seen for the definition group in the overall analyses was only true for the low SES children (b_{low} = 0.34, SE = 0.14, 95%CI [0.07, 0.61]; b_{medium} = 0.23, SE = 0.15, 95%CI [-0.07, 0.53]). The context group did not significantly differ from the control group for either SES status (b_{low} = 0.07, SE = 0.16, 95%CI [-0.25, 0.39]; b_{medium} = 0.19, SE = 0.14, 95%CI [-0.08, 0.46]). No significant differences were found between the two training methods at post-test 2 when taking SES status into account. (b_{low} = -0.27, *SE* = 0.16, 95%CI [-0.58, 0.03]; b_{medium} = -0.04, *SE* = 0.15, 95%CI [-0.33, 0.25]).

For the **control words** at post-test 1, both training methods resulted in significantly more word knowledge than the control group for low SES children ($b_{definition}$ = 0.38, *SE* = 0.14, 95%CI [0.11, 0.64]; $b_{context}$ = 0.40, *SE* = 0.16, 95%CI [0.08, 0.71]), but neither method was effective with the medium SES children ($b_{definition}$ = -0.07, *SE* = 0.15, 95%CI [-0.37, 0.22]; $b_{context}$ = 0.19, *SE* = 0.13, 95%CI [-0.07, 0.45]). No significant differences were found between the two training methods when taking SES status into account (b_{low} = 0.02, SE = 0.15, 95%CI [-0.29, 0.32]; b_{medium} = 0.26, SE = 0.15, 95%CI [-0.03, 0.55]).

For the control words at post-test 2, the advantage shown by the definition group was true for both low and medium SES children (b_{low} = 0.30, SE = 0.14, 95%CI [0.03, 0.56]; b_{medium}

= 0.31, SE = 0.15, 95%CI [0.02, 0.60]). In contrast, the context group was not significantly better than the control group for either low or medium SES children (b_{low} = 0.10, SE = 0.16, 95%CI [-0.22, 0.44]; b_{medium} = 0.08, SE = 0.13, 95%CI [-0.19, 0.34]). The difference between the two training methods was not significant at either SES level (b_{low} = -0.20, *SE* = 0.16, 95%CI [-0.51, 0.11]; b_{medium} = -0.23, *SE* = 0.15, 95%CI [-0.52, 0.05]).

For the **standardized measures of vocabulary**, including SES level in the model did not change the results with respect to receptive nor expressive vocabulary – whether looking at the low SES or medium SES children, neither training group was significantly better than the control group at either post-test 1 or post-test 2. For reading comprehension, although medium SES children in the definition group showed significantly more improvement at post-test 1 compared to the context group, this result is of little consequence, as neither group performed significantly better than the control group.

Finally, a series of analyses was carried out to directly compare the two SES levels **within each group**. The purpose of these analyses was to determine if the effectiveness of training methods varied depending on the socio-economic background of the children. Given the lack of significant results found with the literacy measures, these analyses were restricted to just the taught and control.

For the **taught words** at post-test1, when directly comparing the low- and medium-SES children, significant differences in the control and context groups were found, but not in the definition group, suggesting that this latter training method may have helped reduce the gap in the knowledge of taught words between low- and medium-SES children ($b_{control}$ = 0.54, *SE* = 0.14, 95%CI [0.26, 0.82]; $b_{context}$ = 0.36, *SE* = 0.16, 95%CI [0.05, 0.67]; $b_{definition}$ = 0.24, *SE* = 0.15, 95%CI [-0.05, 0.53]). The same pattern was found at post-test 2, further supporting the suggestion that the definition training may have being more effective in diminishing the knowledge gap of the taught words between low- and medium-SES children ($b_{control}$ = 0.39, *SE*

= 0.14, 95%CI [0.11, 0.67]; $b_{context}$ = 0.51, *SE* = 0.16, 95%CI [0.20, 0.82]; $b_{definition}$ = 0.27, *SE* = 0.15, 95%CI [-0.02, 0.56]).

For the **control words** at post-test1, when directly comparing the low- and medium-SES children, a significant differences was found in the control, but not in the context or definition groups, suggesting that both training methods may have helped reduce the gap in the knowledge of control words between low- and medium-SES children ($b_{control}$ = 0.37, *SE* = 0.14, 95%CI [0.09, 0.65]; $b_{context}$ = 0.16, *SE* = 0.16, 95%CI [-0.14, 0.46]; $b_{definition}$ = -0.08, *SE* = 0.15, 95%CI [-0.37, 0.20]). At post-test 2, none of the differences between low- and medium-SES children were signifcant ($b_{control}$ = 0.21, *SE* = 0.14, 95%CI [-0.06, 0.49]; $b_{context}$ = 0.19, *SE* = 0.16, 95%CI [-0.12, 0.50]; $b_{definition}$ = 0.22, *SE* = 0.15, 95%CI [-0.06, 0.51]).

7. DISCUSSION

"Nothing in life is to be feared. It is only to be understood." (Marie Curie)

This study was set out to test the efficacy of two rich oral vocabulary training methods in comparison to a read-aloud control group in a sample of third-grade Spanish-speaking children from schools located in low SES neighborhoods. As expected, below average scores in the standardized measures of vocabulary and reading comprehension were found for children in this sample. This is in accordance with the literature, which suggests large differences in language related abilities in children from low SES compared to children belonging to a higher SES (Fernald et al., 2013; Justicia, 1995; Hoff, 2003; Lee & Burkam, 2002; White et al., 1990).

The main results, which corroborate the large body of evidence about vocabulary instruction for English-speaking elementary school children, confirm the high effectiveness of rich instruction (NICHD, 2000; Butler et al., 2010; Beck et al., 1982; Beck & McKeown, 2007; Fawcett & Nicholson, 1991; McKeown et al., 1983; McKeown et al., 1985; Elleman et al., 2009; Stahl & Fairbanks, 1986; Nash & Snowling, 2006; Jenkins et al., 1989). It is important to note that the children in the control group were incidentally exposed to the training words in the books that they read and this may have allowed some learning of the training words to occur within this group (Nagy et al, 1987). Indeed, reading aloud has been shown in the past to be effective in improving vocabulary learning (Elley, 1989) due to children's ability to implicit learn words from context. In this sense, we effectively stacked the deck against ourselves, potentially making it more difficult to find statistically significant differences between the training groups and the control group. Nevertheless, using such a control group does have an advantage compared to using a null control group. By using a read-aloud activity for the control group, we were able to determine whether our training methods provided meaningful gains

compared to the children's usual reading activities. Considering these results, we conclude that both definition and context methods of rich vocabulary instruction were more effective in teaching children the meaning of the target words when assessed at the end of the intervention in comparison to the simple exposure to the words that the control group received during their story reading sessions – that is, compared to activities children would likely undertake in reading classes.

Furthermore, five months after the intervention had terminated, children from the definition method still demonstrated a significant learning advantage over the control group. In contrast, the word knowledge advantage shown by the context group over the control group was no longer significant. This suggests that the positive effects of the contextual method boosted word learning only while it was being applied. At the same time, the results suggest that the definition method provided persistent improvement in word knowledge. This pattern of results is contrary to our expectations and those reported by Nash and Snowling (2006), but similar to Jenkins et al. (1989).

One possible explanation for the long-term advantage of the definition group lies in the methodology itself and its adequacy for this age group. Developmentally speaking, the children who participated in the study were at an age where children in general are just starting to develop their metalinguistic abilities (around 8 years old; Gombert, 1992). This is supported by informal observations in some activities at the beginning of the study – for example, even when children could correctly judge whether a definition was "good," or whether a word was used correctly in context, they nevertheless often struggled to express the reason why they thought so. Thus, reflecting about one's language choices and expressing word knowledge in the form of a general decontextualized definition appeared to be very challenging for these children at the onset of this study. Because the activities in the definition method were designed to clearly identify the relevant elements of a definition as well as to teach how to anchor and structure

definitions, they provided children with additional support in organizing and expressing the word knowledge being acquired. In other words, in addition to accumulating new semantic knowledge, the children in this group were learning how to better express semantic knowledge in the form of a clearly structured definition by following an explicit model. In contrast, in the context group, although children were exposed to more words and stories compared to children in the definition group, the manner in which this knowledge was added to the already existing knowledge structures was less prescribed and less systematic. Consequently, these children had to rely more heavily on their own learning strategies for organizing the knowledge being presented.

Moreover, the way in which the activities were designed in the context condition meant that the success of this method was more dependent on the ability of the trainer in moderating the discussions and personal stories told by the children. As a result, even though children in the context group were able to express some of the attained word knowledge in the short-term, this knowledge may have been poorly anchored and was potentially attached to unstable structures that did not facilitate retention and accumulation of further word knowledge in the long-run. This suggests that for children with poor vocabulary knowledge or learning difficulties, a methodology that additionally guides word learning by providing a clearer model of word definition might be more suitable. A similar argument was made by Sternberg (1985), in which an elaborated and rich pre-existing knowledge was said to facilitate further learning. It would, therefore, be plausible that a teaching method less dependent on children's own word learning strategies to accommodate knowledge to already existing (in this case potentially poor) knowledge structures would be more beneficial to children with low vocabulary knowledge. Consequently, the clear (pre-determined) structure and explicit models of student-friendly definitions offered and trained in the definition method used in this work would be more adequate to support these children's word learning processes. In addition, recent evidence from interdisciplinary work in Educational Neuroscience has shown that methods which teach

children to focus their attention on specific information has an impact on how brain networks will be build and, consequently, how supportive these networks will be for future learning (Yoncheva et al., 2014; Yoncheva, Wise, & McCandliss, 2015).

In relation to the potential of the training methods to produce learning transfer effects to items not taught in the sessions, compared to the control group, only the children from the context group showed significant higher levels of knowledge for the control words immediately after the intervention. That said, the advantage for the definition group over the control group just failed to reach significance [95%CI -0.01, 0.39]. Given this confidence interval, a more practical interpretation of the definition result is that it too was more effective in improving word knowledge than the control method of mere exposure.

The success of the context method in demonstrating transfer effects is in accordance with the predictions: in addition to indirectly fostering word awareness, it was designed to elicit word relatedness and to allow children to encounter a larger number of words within dialogues and stories. This combination of effects would potentially increase the probability of acquiring knowledge about words not taught in the intervention. Nevertheless, as stated in the research questions, an advantage for the context method not just over the control group but also over the definition group at post-test 1 was expected. However, no such advantage was found. Interestingly, five months later, a similar pattern to that seen with the taught words was found with the control words. Children in the definition group showed significantly higher levels of knowledge of words not taught in the intervention compared to the children in the control group, but the advantage shown by the context group had all but disappeared.

The long-term advantage of the definition method for the non-taught items could be interpreted in two ways. The first possibility refers to the effect of word awareness as a means of boosting word learning beyond the intervention sessions. If this method was more effective in making children more curious about and attentive to words in general, it is plausible that, in

addition to the taught words, children could improve their vocabulary knowledge of the control words. However, if that were the case, also statistically significant gains in the standardized measures of receptive and expressive vocabulary in children pertaining to the definition group would be expected. Nevertheless, no such differences were found between the groups for either of the standardized vocabulary measures, suggesting that none of the methods had a significant impact on word awareness.

The second explanation for the long-term advantage of the definition method for the non-taught items involves the already mentioned general effect of the definition method in enabling children to express their word knowledge more precisely. If this were the case, also statistically significant improvements would be expected in favor of the definition group in the WISC-IV vocabulary subtest, which similarly demands the ability of defining words orally. Yet, no differences were found in this measure. This raises the question about why improvements were found in the VK test of non-taught words, but none were found in the standardized test of expressive vocabulary, which also contained non-taught words. One possibility is that the VK test is more sensitive than the WISC-IV, both in terms of the items used and the scoring scale. In the first instance, all words in the VK test were age appropriate as they were taken from age-appropriate books. In contrast, the WISC-IV is designed for use with a wide age range (6 to 16 years old). Consequently, the first words in the WISC-IV (e.g., vaca [cow]) are probably too easy for the majority of children in this sample while the last ones (e.g. locuaz [loquacious]) are almost certainly too difficult. Consequently, these items would have very low power to discriminate within the sample, and in effect, a reduced number of items would be responsible for most of the variation found in the WISC scores. Accordingly, this would reduce the sensitivity of the test. The second factor to consider is the difference in scale between the two measures. The theory-based VK test employed a five-point scale and therefore would allow for the capture of smaller changes in word knowledge. In comparison,

the WISC-IV vocabulary subtest uses a three-point scale (not known/more or less known/known).

Finally, for reading comprehension, no significant differences were found between any of the groups. This is in accordance with the literature, which has shown that vocabulary instruction has a larger impact on customized rather than on standardized measures of vocabulary and reading comprehension (Elleman et al., 2009; Marulis & Neuman, 2010; NICHD, 2000; Stahl & Fairbanks, 1986). Although, some studies have reported increases in reading comprehension after vocabulary training (McKeown et al., 1983; McKeown et al., 1985), the texts used in these studies were conceived for the intervention and contained the taught words. In contrast, in this study none of the trained words appeared in the reading comprehension standardized tasks. In this sense, more general transfer effects from vocabulary training to reading comprehension were targeted. The results suggest that the training methods were not robust enough in fostering children's word awareness to the point of making a significant contribution to increasing performance in the reading comprehension measure. It should be noted that, while the hypotheses regarding the direct effects of the intervention were based on clear empirical evidence regarding the effect size (Elleman et al., 2009), the hypothesis regarding the impact on reading comprehension (and indeed expressive and receptive vocabulary) were more theoretically based, and without clear empirical evidence for a specific effect size.

If we consider the theories about the relationship between vocabulary knowledge and reading comprehension, there are specific possibilities in which reading comprehension could be improved via a vocabulary training program. Firstly, if a direct relation is assumed (as per the instrumentalist hypothesis), in the sense that knowing more words in a text would facilitate its comprehension, then teaching the specific words that come up in the tested texts (as it was the case in McKeown et al., 1983, 1985; and in studies of text readability, Stahl, 2003) would

lead to an improvement in comprehension. Conversely, if the possibility of an indirect relationship between vocabulary and reading comprehension is assumed, the intervention would need a design that triggers not only an enrichment of vocabulary knowledge, but also a reorganization or restructuring of linguistic and metalinguistic information within the lexicon of the child (similar to the verbal aptitude hypothesis). This could be accomplished in basically two ways. Either the intervention is designed to teach an enormous amount of words that would, in effect, accelerate or provide additional support of the natural process of learning words (as per developmental theories; Walley, 1993) or the specific teaching method must be thought to have the potential to trigger these restructuration processes even when less words are taught, as was the hope in this study based on the structured characteristics of word knowledge and word awareness. The study by Clarke et al. (2010) did report significant improvements in standardized tests of reading comprehension by teaching the same number of words as were taught in this study. Nevertheless, apart from differences in sample characteristics (children with reading difficulties) and methodology (training length, intensity), in Clarke's study (2010) the oral vocabulary training was only one component of a broader intervention for oral language abilities, which additionally included elements such as reciprocal teaching in spoken language and figurative language. One could argue that this intervention had the potential to promote only part of the effects triggered by the more comprehensive oral language intervention employed by Clarke et al. (2010). Thus, the results of this study suggest that perhaps a small effect might exist, but this study did not have the power to detect it.

In summary, the results of this study demonstrate the effectiveness of explicit vocabulary instruction based on oral language activities using a sample of Spanish-speaking children from low SES. This is consistent with the works of Beck and colleagues (1982, 1983, 1985), Nash & Snowling (2006), and Clarke et al. (2010). More specifically, the present results suggest that the rich oral vocabulary instruction based on the definition method was more effective to teach target word meanings. Moreover, children appeared to additionally profit

from long-lasting and specific effects of the training in regard to structuring and expressing their word knowledge more precisely.

As mentioned in the introduction/methodology, one of the overarching goals of this study was to target children in low SES areas, and thus, the expectation was that the majority of children would be low SES. However, after the pre-test evaluations had been completed, the data revealed an approximately 50/50 split between low and medium SES children. This opened up the possibility to directly compare these two subgroups. However, as the planning for the study sample size did not include this factor, along with the fact that one school dropped out of the study just prior to pre-test, including SES in the statistical analyses resulted in a drop in statistical power such that only large effect sizes could realistically be expected to be unearthed. Thus, the interpretations from the analyses that follow are tentative and null results must be considered in light of the reduced statistical power. Nevertheless, a particular pattern of results, which could conceivably contribute for planning future vocabulary intervention studies with low SES populations, might be worthy to consider.

When taking the SES levels into account in regard to the taught words, it seems that the positive effect of the explicit rich instruction was mostly driven by the low SES children, as, for medium SES children, none of the methods provided long-term, persistent gains. This is again in accordance with the literature, in which an advantage of explicitly teaching vocabulary to at-risk children has been shown (Chall, 1987; Marulis & Neuman, 2010).

Furthermore, if we take a closer look at the raw scores for receptive and expressive vocabulary, an interesting pattern emerges when we compare the definition and control groups (although this is speculative as none of the following differences were significant when formally tested). When looking at the difference between pre-test scores and post-test 2 scores, for the control group, the medium SES children showed larger gains compared to the low SES children for both receptive vocabulary (+13.7 vs +7.7) and expressive vocabulary (+6.1 vs

+1.6). This is unsurprising and is in accordance with the already mentioned Matthew effect (page 156), which basically states that children with a head-start will have a greater potential to grow even more (Stanovich, 1986). However, when looking at the definition group, the advantage for medium SES children over low SES children was not present. For expressive vocabulary, the gains were very similar between the two groups (+4.1 for low SES vs +4.4 for medium SES), and for receptive vocabulary, the low SES group actually showed larger gains (+14.5 vs +10.9). Theoretically speaking, it could be argued that having lower vocabulary knowledge, as it was the case of the children in the low SES group in this sample, would possibly mean possessing a simpler structured and less refined word knowledge with fewer links between knowledge units. A similar argument was made by Sternberg (1985), in which an elaborated and rich pre-existing knowledge was said to facilitate further learning. It would, therefore, be plausible that a teaching method less dependent on children's own word learning strategies to accommodate knowledge to already existing (in this case potentially poor) knowledge structures would be more beneficial to children with low vocabulary knowledge. Consequently, the clear (pre-determined) structure and explicit models of student-friendly definitions offered and trained in the definition method used in this work would be more adequate to support these children's word learning experiences.

Again, it is important to remind the reader that these interactions were not statistically significant, but the trend suggests that the definition method might have been more suitable for reducing the disadvantage normally shown by low SES children.

7.1. Limitations

This takes us to the first limitation of this study. Although performance differences between low and middle SES children were anticipated, the expectation at the outset of the study was to have children from a low SES background. Thus, the possibility of comparing

these two subgroups of children was not initially considered, as highly unbalanced designs reduce statistical reliability. For this reason, the a priori sample size calculations were based on an ANCOVA design comparing just the three training groups. Subsequently, when it became clear that the sample contained similar numbers of children from low and middle SES backgrounds, the possibility of comparing those arose. However, one consequence of adding this originally unplanned factor to the analyses was a corresponding loss of statistical power. Thus, any analyses including SES would be underpowered, and only capable of detecting large effects. Nevertheless, possible differences between low and middle SES children in response to the specific methodologies were of sufficient relevance to warrant carrying out these analyses, which should be seen as only "explorative."

A second important issue to be considered when interpreting the overall results of the intervention is related to children's behavior. As mentioned, there were children in the sample who displayed disruptive behavior. Even though behavioral issues were theoretically covered in the training provided to the research assistants, based on reviewing the protocols and from the weekly meetings, additional behavior management techniques based on extrinsic motivation were introduced from the seventh session onwards in order to try to minimize the negative effects on the learning process. A description of cases would go beyond the scope of this work, but it is relevant to say that considering the numerous class disruptions experienced during the intervention, the positive effects found in this study are impressive, and are a reason to believe that most children are highly skilled word learners when they are exposed to a rich language environment.

Nevertheless, when working with populations with behavioral problems, recruiting specialized and more experienced teachers is recommended, as classroom management is considered one of the major challenges faced by beginning teachers (Ingersoll & Smith, 2003). An alternative would be to implement more extensive training, along with a trial phase before

intervention officially starts. This would allow teaching assistants not only to get to know the children and build an initial positive relationship with them, but also to gather experience using the learned behavioral strategies in the group.

A third limitation is that, due to the schools cancelling some sessions, the original plan to teach three words per session had to be modified to teach four words per session. This meant that less time could be spent teaching each of the words of the day, and children had less time and fewer opportunities to talk about each word. Potentially, this could have reduced the effectiveness of the two training methods for the second half of the study.

7.2. Final conclusion and future work

Despite the mentioned limitations, this study nevertheless fills an important gap in the literature, as to the best of our knowledge, it is the first evidence-based vocabulary training program undertaken with Spanish-speaking children which has used a randomized controlled design. Additionally, the inclusion of the five-month follow-up evaluation enabled us to assess the long-term efficacy of the two methods, and the importance of this was highlighted by the fact that the results changed from post-test 1 to post-test 2. Such data not only allow for more accurate cost-benefit estimations of potential interventions, but also enable a deeper understanding of the specific learning effects potentially triggered by the particular teaching techniques. The inclusion of the session protocols as a means of accessing implementation fidelity also allowed the identification of potential problems and the implementation of corrective action accordingly.

Further qualitative analyses of children's answers are planned. These should serve as basis for generating hypotheses for future exploration of the transfer effects of the definition method in relation to fostering concept formation as well as a self-teaching strategy when

learning new words or expressing word knowledge. In particular, it would be interesting to investigate whether this kind of methodology is more suitable for children with initial poor vocabulary or language comprehension difficulties. The clear structure taught using this method could have the potential to help children when further learning new words, as they could possibly be trained to take special note of specific information and to develop word storage mechanisms that are supported by a more suitable pre-structure and brain network. From the perspective of teaching practices, this is also a more straightforward method and easier to apply for less experienced teachers, who might rely more strongly on instructions given in a manual.

In sum, in this work the vocabulary knowledge gap between children from low and middle SES was once again found. Especially in countries with large social inequalities, as it is the case of many Spanish-speaking countries, the educational system carries great responsibility in diminishing the knowledge and ability gaps of disadvantaged students. Nevertheless, this was not what was found with this sample at the outset of the study, suggesting that the system is not providing these students with the kind of resources they need to be able to compensate for less privileged home literacy and language experiences. If our goal is to work towards diminishing the differences and more strongly beneficiating children from social disadvantaged homes, explicit and rich oral vocabulary instruction is especially indicated for low SES children.

Finally, various actions were planned and undertaken to facilitate the dissemination of these results to a wider, non-academic audience. These included oral presentations in the participating schools, written summaries for parents, a small dictionary with some of the words learned in the training for the children, and a vocabulary program book in Spanish with description of background theories and activities in the training groups for elementary school teachers (*in preparation*). However, it is important to say that we are aware of the limitations of research and sample representativeness as well as the complexity and dynamics of school

reality. Therefore, by no means it is a claim that the definition vocabulary program, as it was used in this work, is the best program for Spanish-speaking children at this age. In order to inform policy, stronger evidence based on larger scale studies and systematic mapping of vocabulary teaching practices in Spanish-speaking countries is needed. What can be said, based on the experiences gained implementing this project, is that the explicit rich vocabulary instruction can be recommended over one of the traditional methods practiced in Spanish schools. In addition, the definition program designed for this project can be used as a basis for the development of vocabulary intervention studies and for further discussion together with educators working with Spanish-speaking populations.

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APPENDICES

Appendix 1. List of intervention words in the order they were taught

Session	Words	Gram. Class	Length	Freq/ million	Richness	Productivity
1	ingenio	N	7	17.68	6	3
	atreverse	V	9	8.21	1	3
	insoportable	A	12	19.82	2	2
2	aficionado	N	10	15.54	3	3
	detectar	V	8	18.93	1	4
	fundamental	A	11	48.21	2	3
3	precaución	N	10	9.64	2	3
	intervenir	V	10	18.57	4	4
	cómodo	A	6	25.89	3	5
4	dignidad	N	8	35.36	4	4
	insistir	V	8	12.50	3	3
	aplicado	A	8	16.07	2	6
5	amenaza	N	7	47.86	2	4
	ocultar	V	7	17.14	4	4
	interminable	A	12	15.18	1	4
6	refugio	N	7	21.25	2	3
	proponer	V	8	9.11	3	3
	adecuado	A	8	60.17	1	4
7	protagonista	N	12	34.11	2	3
	empeñarse	V	9	0.54	6	5
	denso	A	5	16.08	3	4
8	aparato	N	7	53.93	7	3
	proporcionar	V	12	10.71	3	5
	trágico	A	7	21.61	3	2
9	rastro	N	6	18.39	3	2
	recurso	N	7	27.68	4	2
	disponer	V	8	17.32	7	7
	siniestro	A	9	19.47	5	3
10	satisfacción	N	12	36.07	6	6
	superar	V	7	26.96	5	4
	revelar	V	7	7.32	3	4
	orgulloso	A	9	20.53	2	3

11	responsabilidad	N	15	63.04	2	4
	suceder	V	7	15.71	3	5
	repleto	A	7	13.57	1	1
	idéntico	A	8	25.36	2	2
12	asombro	N	7	26.07	2	3
	casualidad	N	10	23.93	2	2
	distinguir	V	10	26.07	3	6
	espléndido	A	10	19.82	2	4
13	vértigo	N	7	13.04	3	2
	rescatar	V	8	8.21	3	2
	conquistar	V	10	8.04	4	4
	semejante	A	9	67.14	4	6
14	vigilancia	N	10	22.86	2	5
	prever	V	6	10.89	2	6
	repentino	A	9	18.93	1	3
	apropiado	A	9	15.17	1	3
15	entusiasmo	N	10	43.04	3	4
	probabilidad	N	12	15.71	2	3
	lograr	V	6	42.50	1	4
	procedente	A	10	14.82	2	4
16	estabilidad	N	11	22.50	3	4
	contemplar	V	10	34.29	4	3
	comprobar	V	9	60.24	1	3
	auténtico	A	9	66.43	3	4
17	reconocimiento	N	14	58.21	2	4
	detener	V	7	19.29	3	4
	severo	A	6	19.46	3	2
	pendiente	A	9	31.61	7	2

Note. Gram. Class = grammatical class (A = adjective, N = noun, V = verb); Freq/million = frequency of appearance per million words in written material (Martínez-Martín & García, 2004); Richness = number of different meanings; Productivity = number of derivatives.

Appendix 2. List of control words in alphabetical order

Words	Gram. Class	Length	Freq/ million	Richness	Productivity
antigüedad	N	10	15.00	4	5
concepto	N	8	66.79	2	6
convertirse	V	11	26.79	3	7
demostrar	V	9	44.29	3	4
disimular	V	9	11.79	3	2
evidente	A	8	69.82	1	4
experto	A	7	21.07	2	2
exponer	V	7	8.04	4	6
fenómeno	N	8	56.61	5	4
magnífico	A	9	23.04	3	3
maniobra	N	8	13.04	5	2
prestigio	N	9	33.75	1	4
remoto	A	6	27.14	3	2
suponer	V	7	36.25	5	4
tierno	A	6	15.89	3	4

Note. Gram. Class = grammatical class (A = adjective, N = noun, V = verb); Freq/million = frequency of appearance per million words in written material (Martínez-Martín & García, 2004); Richness = number of different meanings; Productivity = number of derivatives.

Appendix 3. An example of text for the activity “The missing link” in the context training group

Instrucciones para el entrenador

Componentes del entrenamiento de inferencias:

Universidad de Granada

A) *Elaboración léxica*: niños completan el texto con la palabra que falta y explican como la han descubierto (cuales son las pistas que pueden encontrar en el contexto alrededor); cual es la contribución de cada una de las palabras claves en la frase para el entendimiento del texto (frase, párrafo, historia).
B) *Generación de preguntas*: niños escuchan las preguntas que son hechas por el entrenador durante la lectura (modelar); en una segunda intenta los niños generan sus propias preguntas sobre el texto.
C) *Vigilando la comprensión***:** resumir, hacer preguntas, predecir el contexto.

Como desarrollar la actividad:

1) Leer el texto en voz alta y completar el texto con las palabras del día.
   ¿Dónde vá cual palabra? ¿Por qué? (preguntar cómo saben; que pista en el texto han utilizado para saber)

2) Mientras lees el texto, parar en los “**STOPS**” de pensamiento. Preguntar y discutir con los niños. Cada niño debe responder por lo menos a una pregunta.
3) Hacer la reflexión final sobre la historia:
   ¿Habéis entendido la historia?
   ¿Les ha gustado la historia? ¿Por qué?

4) Intentar contarla utilizando solamente 4 frases (modelar utilizando un ejemplo de una otra historia conocida por los niños, como la “Blanca Nieves”).
5) Escoger solamente cuatro palabras que pueden resumir la idea principal de la historia (“contar” la historia utilzando solamente cuatro palabras). Completar los cuatro eslabones que juntos forman la cadena completa de la historia (modelar utilizando el ejemplo anterior).
6) Dar un nombre a la historia

TEXTO (adapted from "Cuentos populares japoneses" [Japanese popular tales] by Ed. Gaviota)

Vivía una vez en la ciudad de Nagoya en Japón el rico comerciante de telas Hansaemón que era aficionado por licores. A él le gustaba por encima de todo un buen vaso de *sake* hasta el punto, que los tazones normales de porcelana no eran bastante grandes para él. Entonces mandó fabricar un enorme y muy bien elaborado cubilete laqueado que contenía el volumen de un cántaro entero de *sake*.

STOP 1: ¿Qué tipo de texto es?

(reconocer el tipo de texto)

Un día, como de costumbre, el señor Hansaemón, entusiasmado después de una buena comida, mandó que le trajesen su cubilete preferido repleto de *sake*. Lo cogió con las manos, cerró los ojos y bebió sin **detenerse.** Ocurrió que justo en ese momento una mosca curiosa volaba a su alrededor; cuando los criados quisieron cazarla, cayó por casualidad directamente en el cubilete y, antes de que los sirvientes pudieran advertir al señor Hansaemón, este se tragó la mosca en un sorbo de *sake*.

Los sirvientes pidieron perdón a su amo. Normalmente era un hombre muy **severo**, pero este día estaba de buen humor y los perdonó. Pero la mosca se encontraba en su estómago. Allí revoloteaba y zumbaba, y eso no le gustó al señor Hansaemón nada en absoluto.

STOP 2: ¿De qué se trata el cuento?

(prever, pre-activar información previa sobre el tema o historia ya almacenada en sus memorias)

Se montó en su silla y mandó que le llevaran a casa del famoso médico señor Hori.

- ¡*Ojaiogosaimasu*! (buenos días)

- *Ojaiogasaimasu*, señor Hansaemón.

El señor Hansaemón le contó sus penas al médico:

- Doctor, he bebido hoy un excelente *sake*, pero, desgraciadamente, al mismo tiempo he tragado una mosca y ahora revolotea en mi estómago, zumba y es muy desagradable. Dígame qué debo hacer.

STOP 3: ¿Cuál consejo darías tú al señor Hansaemón?

¿Cuál consejo crees que el médico dará al señor Hansaemón?

(intentar entender las diferentes perspectivas de los personajes del texto)

El médico hizo un gran esfuerzo de reflexión, inclinó la cabeza y dijo:

- Lo mejor será que trague una rana; esta atrapará a la mosca y se quedará tranquilo.

- ¡*Arigato*, doctor! - el señor Hansaemón le dio gracias y como **reconocimiento** le dio dinero extra por el buen consejo.

STOP 4: ¿Crees que va a funcionar el consejo del médico? ¿Por qué?

(prever, pre-activar información previa sobre el tema o historia ya almacenada en sus memorias)

En seguida, mandó que le llevaran rápidamente a casa y envió a sus sirvientes al jardín para que capturaran una rana. Luego se la tragó y, al cabo de un momento, el zumbido de su estómago cesó.

Pero, ahora, en el estómago el señor Hansaemón tenía, en lugar de la mosca, una rana, y ésta no estaba a gusto en absoluto. Daba saltos, croaba y tampoco era especialmente agradable.

El señor Hansaemón subió otra vez a su silla y mandó que le llevaran a casa del famoso médico doctor Hori.

Allí se lamentó:

- Doctor, me he tragado la rana como usted me aconsejó. La mosca ya no zumba, pero en su lugar la rana no cesa de saltar y de croar en mi estómago, y también es muy desagradable. ¿Qué debo hacer?

STOP 5: ¿Cuál consejo darías tú al señor Hansaemón?

¿Cuál consejo crees que el médico dará al señor Hansaemón?

(intentar entender las diferentes perspectivas de los personajes del texto)

El médico reflexionó, inclinó la cabeza con gesto pensativo y acabó por decir:

- Como tiene una rana en el estómago, tráguese una culebra. Esta se comerá a la rana y se quedará tranquilo.

El señor Hansaemón le dio las gracias, mandó que le llevaran a casa y envió a sus sirvientes al arroyo a capturar una culebra.

STOP 6: ¿Crees que ahora va funcionar el consejo del médico? ¿Por qué?

(prever, pre-activar información previa sobre el tema o historia ya almacenada en sus memorias)

Se tragó la culebra y la rana se acabó.

Pero la culebra, a su vez, no encontró el lugar a su gusto; se retorcía y silbaba. Esto, evidentemente, no le gustó al señor Hansaemón.

A este punto sus criados estaban **pendientes** del señor Hansaemón que ya se había tragado una mosca con el *sake*, una rana para atrapar la mosca, una culebra para comer la rana, y todavía no había superado el problema.

¿Qué podía hacer aparte de dirigirse de nuevo a casa del famoso médico, el señor Hori, para pedirle consejo?

- Doctor, doctor, me he tragado una culebra, como usted me aconsejó. La rana ya no atormenta, pero en su lugar la culebra se retuerce en mi estómago y silba. Es muy desagradable; ¿qué debo hacer?

STOP 7: ¿Cuál consejo darías tú al señor Hansaemón?

¿Cuál consejo crees que el médico dará al señor Hansaemón?

(intentar entender las diferentes perspectivas de los personajes del texto)

El médico reflexionó durante más tiempo esta vez, empeñándose en encontrar una solución, y luego dijo:

- Si la culebra molesta, tráguese un jabalí; este matará a la culebra y se quedará tranquilo.

El señor Hansaemón le dio las gracias y envió inmediatamente a sus criados al bosque para que capturaran un jabalí.

STOP 8: ¿Crees que ahora va funcionar el consejo del médico? ¿Por qué?

(prever, pre-activar información previa sobre el tema o historia ya almacenada en sus memorias)

Se lo tragó, y realmente, al cabo de un rato, el silbido de a culebra cesó.

Pero un jabalí en el estómago es todavía peor que una culebra. Furioso, el jabalí corría por todas partes, daba golpes con las patas y gruñía.

Era insoportable, y el señor Hansaemón tuvo que ir de nuevo a casa del médico para buscar ayuda:

- Doctor, ayúdame, el jabalí ha matado a la serpiente, pero me está destrozando el estómago y gruñe tanto que es completamente insufrible. ¿Qué debo hacer?

STOP 9: ¿Cuál consejo darías tú al señor Hansaemón?

¿Cuál consejo crees que el médico dará al señor Hansaemón?

(intentar entender las diferentes perspectivas de los personajes del texto)

De nuevo, el médico reflexionó largamente y acabó por decir:

- Lo mejor contra un jabalí es un cazador. Tráguese un cazador; éste matará al jabalí y se quedará tranquilo.

El señor Hansaemón dio las gracias al sabio médico y corrió a su casa. Inmediatamente envió a sus criados a las montañas para traer un cazador. Cuando éste llegó al día siguiente, el señor Hansaemón no le hizo pregunta alguna y se lo tragó rápidamente.

STOP 10: ¿Crees que ahora va funcionar el consejo del médico? ¿Por qué?

(prever, pre-activar información previa sobre el tema o historia ya almacenada en sus memorias)

Y el médico al final tenía razón. Al cabo de un instante, se oyeron disparos en le estómago del señor Hansaemón. Era el cazador, que quería matar el jabalí.

STOP 11: ¿Cómo crees que acabará la historia?

(prever, pre-activar información previa sobre el tema o historia ya almacenada en sus memorias)

Pero, en la oscuridad que reinaba en el estómago, le costaba mucho alcanzar su presa, y como mató al jabalí con la última bala, no le quedó más munición para abrirse paso a sí mismo y salir; así que todavía hoy se encuentra en el estómago del señor Hansaemón.

STOP 12: ¿Has entendido la historia?

¿Te has gustado la historia?

(reflexión final)

***** Información adicional: **STOP 1 -** tipos de textos.

a) Exposición: es un escrito para explicar de un modo claro y ordenado un tema o asunto, por ejemplo los escritos de contenido científico.
b) Narración: es un relato de una historia imaginario o real que consta de tres partes: introducción (presentación del tema), nudo (aventura) y desenlace (final).
c) Cuento: es una narración curta, que relata una historia imaginaria o real.
d) Fábula: es un cuento cuyos personajes son animales y termina con una enseñanza o moraleja.
e) Poesía: es un tipo de texto que, generalmente, se utilizar para expresar sentimientos. Cada línea se llama un verso y un grupo de versos se llama estrofa. Los versos que tienen al final sonidos iguales o parecidos se dice que riman.
f) Carta: es un escrito que envía una persona a otra para comunicarse. En la carta suelen escribir el lugar, la fecha y el mensaje. Al final, una despedida, junto con la firma.

Appendix 4. Observation protocol (2 pages).

ELDEL - WPIII Training Vocabulary to Improve Reading Comprehension

Universidad de Granada

PROTOCOLO DE OBSERVACIÓN DE LAS SESIONES EN GRUPO

Entrenador/a: _____ Fecha: ___ /___ /_____
Escuela: XX ☐ XX ☐ XX ☐
Sesión: 10 ☐ 11 ☐ 12 ☐ 13 ☐ 14 ☐ 15 ☐ 16 ☐ 17 ☐
Número de niños presentes: _____

Por favor, completar este formulario con mucha atención.

PARTE I: PRESENTANDO LA PALABRA

¿Cuánto tiempo fue utilizado para la actividad?
hora inicio _____ hora final_____ total _____ (minutos)

¿Cuál actividad fue utilizada?
Letras Mescladas ☐ El Ahorcado ☐ Sopa de Letras ☐ Lengua Funky ☐

¿Cuántas palabras han fueron introducidas con la actividad?
1 ☐ 2 ☐ 3 ☐ 4 ☐

¿Crees que los niños en general entendieron la actividad?
sí ☐ no ☐

¿Crees que a los niños les gustó la actividad?
en general, sí ☐ algunos mucho, otros nada ☐ en general, no ☐

¿Crees que los niños en general estuvieron motivados y participativos?
sí ☐ no ☐

¿Crees que el entrenador consiguió realizar la tarea de manera efectiva?
sí ☐ no ☐, porque
_____

PARTE II: APRENDIENDO LA PALABRA

¿Cuánto tiempo fue utilizado para la actividad?
hora inicio _____ hora final_____ total _____ (minutos)

¿Cuál actividad fue utilizada?
Detective de Palabras ☐ Mapa Semántico ☐ Los Jueces ☐ Escucha con Atención ☐
Exprésate ☐ Historieta ☐ Palabras Amigas y Enemigas ☐
El Eslabón Perdido ☐ ¿1+1 es…? ☐ Diccionario ☐

¿Cuántas palabras fueron enseñadas con la actividad?
1 ☐ 2 ☐ 3 ☐ 4 ☐

¿Crees que los niños en general entendieron la actividad?
sí ☐ no ☐

¿Crees que a los niños les gustó la actividad?
en general, sí ☐ algunos mucho, otros nada ☐ en general, no ☐

¿Crees que los niños en general estuvieron motivados y participativos?
sí ☐ no ☐

¿Crees que los niños aprendieron las palabras del día?
sí ☐ no ☐, porque

¿Crees que el entrenador consiguió realizar la tarea de manera efectiva?
sí ☐ no ☐, porque
_____

PARTE III: REPASANDO LA PALABRA

¿Cuánto tiempo fue utilizado para la actividad?
hora inicio _____ hora final_____ total _____ (minutos)

¿Cuál actividad fue utilizada?
Patata Caliente ☐ Carrera de palabras ☐ Juego de La Oca ☐ Juego de Cartas ☐

Marque cuántas veces los niños pudieron responder a preguntas sobre las palabras durante el juego.

Total: _____

Marque cuantas veces durante el juego los niños contestaban…
… correctamente a la pregunta sin necesitar de la ayuda del entrenador o de los compañeros.

Total: _____

… correctamente a la pregunta con la ayuda del entrenador o de los compañeros.

Total: _____

… falsamente a la pregunta (mismo con ayuda no pudieron dar una respuesta correcta).

Total: _____

¿Crees que los niños en general entendieron la actividad?
sí ☐ no ☐

¿Crees que a los niños les gustó la actividad?
en general, sí ☐ algunos mucho, otros nada ☐ en general, no ☐

¿Crees que los niños en general estuvieron motivados y participativos?
sí ☐ no ☐

¿Crees que el entrenador/la entrenadora consiguió realizar la tarea de manera efectiva?
sí ☐ no ☐, porque

Appendix 5. Informed consent for the school: Form and information letter (3 pages)

Entrenamiento de vocabulario para mejorar la comprensión lectora

Universidad de Granada

Investigadores: Clara Gomes, Sylvia Defior, Araceli Valle y colaboradores
Universidad de Granada
Facultad de Psicología – Departamento de Psicología Evolutiva y de la Educación

CONSENTIMIENTO INFORMADO DEL DIRECTOR DEL COLEGIO

Marque lo que corresponda

1. Confirmo que he leído y he comprendido la información que consta en el documento informando sobre el proyecto arriba mencionado. ☐ ☐
2. Estoy de acuerdo en que los niños de este colegio participen en el estudio indicado en dicho documento informativo.
3. El investigador/a ha respondido todas mis preguntas relevantes sobre el estudio y sus propósitos. ☐
4. Comprendo que puedo retirarme del estudio en cualquier momento. ☐
5. Comprendo que los datos serán anonimizados y confidenciales. Los niños no serán identificables en ninguna publicación. Sólo los investigadores autorizados tendrán acceso a la información inicial. ☐
6. Comprendo que, conforme la Acta de Protección de la Información, puedo solicitar acceso a los datos obtenidos. ☐

En caso de duda o queja, por favor contacte con la profesora Sylvia Defior, Facultad de Psicología, Universidad de Granada (Tel. 958 249408, sdefior@ugr.es)

Nombre del Director/a:…………….……………………………….............................…………………..…

Colegio: ....

Número de teléfono:…………………........................... E-mail: .....……...…………………….......................

Firma:……………………...................….……….…..……………….. Fecha: …................…..……………

SEVENTH FRAMEWORK PROGRAMME

eldel enhancing literacy development in european languages

Estimado/a Sr/a. Director/a:

Le enviamos información general sobre el proyecto ELDEL y específica sobre el estudio que queremos llevar a cabo XXX en su escuela. Es importante explicar las razones del estudio y los aspectos involucrados en su realización. Le pedimos que lea con atención las siguientes informaciones y que nos contacte en caso de duda.

El proyecto ELDEL es un gran proyecto de investigación financiado por la Unión Europea. En los cinco países participantes se llevan a cabo estudios relacionados con diversos aspectos del lenguaje oral y escrito y los factores que pueden influenciar en su adquisición y desarrollo. Hemos solicitado que su escuela participe en una parte del proyecto ELDEL, en colaboración con la Universidad de Granada.

¿Cuál es el objetivo del proyecto?

El estudio quiere evaluar la efectividad de métodos distintos de enseñanza del vocabulario para niños de educación primaria (EP). Estos métodos tienen como objetivo mejorar tanto el conocimiento de vocabulario como fomentar el desarrollo de la comprensión lectora. Más allá de aprender nuevas palabras, los métodos aspiran a incrementar los conocimientos sobre las palabras a través de diversas actividades, significativas para los niños y relacionadas con sus actividades escolares. Debido al carácter experimental del estudio, habrá un grupo control. Los niños en este grupo recibirán una hora de "cuenta cuentos."

PLAN PARA EL ESTUDIO

Los niños de tercero de EP serán divididos al azar en tres grupos. Uno de los grupos recibirá una hora de "cuenta cuentos", mientras que los otros dos recibirán entrenamiento en vocabulario basado en distintos métodos de enseñanza.

Además, planeamos pedir a los padres al principio del estudio que rellenen un cuestionario sobre sus datos socio-económicos, su nivel educativo y sus actitudes y creencias sobre la lectura.

El plan que figura abajo sería nuestra sugerencia y estimación del tiempo necesario para evaluar a todos los niños. Por supuesto, existe la posibilidad de cambio, si se hace necesario, por motivos de la planificación de su escuela.

La evaluación previa

La evaluación *pre-intervención* se llevaría a cabo XXX. Los niños serían evaluados de sus habilidades de vocabulario, comprensión lectora y oral, atención, lectura, memoria, y CI no verbal. Para esto necesitaríamos espacios en su escuela, donde los entrenadores pudieran trabajar con los niños separadamente.

Para la evaluación del conocimiento de comprensión lectora se utilizarán pruebas colectivas, las cuales pueden ser administradas en grupo, es decir, todos los niños pueden ser evaluados juntos en sus clases. Para la evaluación de las otras habilidades serán utilizadas pruebas estandarizadas y pruebas desarrolladas por los investigadores, las cuales serán administradas individualmente.

La aplicación de todas las pruebas tardará más o menos 2 horas. Por lo tanto, intentaríamos dividir la evaluación de cada niño en tres o cuatro sesiones de más o menos 30 minutos. Esto significa que en los días estipulados necesitaríamos estar retirando los niños de sus actividades y de sus clases uno a uno.

El entrenamiento

El entrenamiento se llevaría a cabo XXX. Como comentamos en la reunión, podríamos hacerlo en la primera y segunda hora del horario escolar ("Taller de lengua"). En total habrá 20 sesiones de 50 minutos cada. Las sesiones se llevarán a cabo tres veces por semana. Por favor, mire el calendario adjunto con las fechas específicas de cada sesión.

Para el entrenamiento necesitaríamos tres espacios en su escuela, donde los entrenadores pudieran trabajar con su grupo de niños separadamente.

La evaluación posterior

La evaluación *pos-intervención* se llevaría a cabo XXX. Los niños serían evaluados de nuevo con las mismas pruebas de la evaluación *pre-intervención*. Para esto necesitaríamos espacios en su escuela, donde los evaluadores pudieran trabajar con los niños separadamente.

Permiso para llevar a cabo el estudio

Dado que los participantes son niños, es necesario tener un consentimiento informado firmado por ambos, los padres y los directores de las escuelas, antes de empezar con la recogida de datos.

Agradecemos de antemano la participación de su escuela y quedamos a su disposición en caso de duda sobre este estudio.

Un cordial saludo, del grupo de investigación,

Sylvia Defior Clara Gomes Araceli Valle

Facultad de Psicología

Departamento de Psicología Evolutiva y de la Educación

Campus Cartuja s/n - 18071 Granada

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www.eldel.eu

Appendix 6. Informed consent for the parents: Form and information leaflet (3 pages)

Entrenamiento de vocabulario para mejorar la compresión lectora

Investigadores: Clara Gomes, Sylvia Defior, Araceli Valle y colaboradores
Universidad de Granada
Facultad de Psicología – Departamento de Psicología Evolutiva y de la Educación

CONSENTIMIENTO INFORMADO

Marque lo que corresponda

1. Confirmo que he leído y he comprendido la información que consta en el documento adjunto sobre el proyecto de investigación arriba mencionado. He tenido la oportunidad de considerar dicha información, realizar preguntas y obtener respuestas satisfactorias. ☐
2. Comprendo que la participación de mi hijo/a es voluntaria y que puedo retirarlo/a de la investigación en el momento que lo desee, sin tener que justificarlo. ☐
3. Autorizo a mi hijo/a a formar parte de este estudio. ☐

En caso de duda o queja, por favor contacte con la profesora Sylvia Defior, Facultad de Psicología, Universidad de Granada (Tel. 958 249408, sdefior@ugr.es)

Nombre del niño/a:……

Nombre del padre/madre o tutor:……

Firma …….. Fecha ……

Sus datos:

Dirección:……

Número de teléfono: ……. Correo electrónico (E-mail): …….

Datos de contacto

En caso de necesitar más información, por favor contacte con las investigadoras *Clara Gomes* y *Araceli Valle*.

Dirección:
Universidad de Granada
Facultad de Psicología
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Campus Cartuja s/n
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E-Mail: cgomes@ugr.es

En caso de queja sobre este estudio, por favor contacte con la profesora *Sylvia Defior*, Departamento de Psicología Evolutiva y de la Educación, Universidad de Granada.

Tel: 958-249408
E-Mail: sdefior@ugr.es

Gracias de antemano por leer estas informaciones y permitir la participación de su hijo/a en este estudio.

SEVENTH FRAMEWORK PROGRAMME

eldel
enhancing literacy development in european languages

Universidad de Granada

Ilustración: Virginia Gonzales, **Layout:** Agentur-Zeitpunkt.at

Entrenamiento del vocabulario para mejorar la comprensión lectora

Información para los padres

Universidad de Granada

JUNTA DE ANDALUCIA
CEIP ATALAYA

Título del Proyecto:

Entrenamiento del vocabulario para mejorar la comprensión lectora

El proyecto ELDEL es un gran proyecto de investigación financiado por la Unión Europea. En los cinco países participantes se llevan a cabo estud ios relacionados con diversos aspectos del lenguaje oral y escrito y los factores que pueden influenciar en su adquisición y desarrollo. Su hijo/a es invitado a participar en una parte del proyecto ELDEL, en colaboración con la Universidad de Granada. Es importante explicar las razones del estudio y los aspectos involucrados en su realización. Le pedimos que lea con atención las siguientes informaciones y que nos contacte en caso de duda.

¿Cuál es el objetivo del proyecto?

El estudio quiere evaluar la efectividad de métodos distintos de enseñanza del vocabulario para niños de educación primaria. Estos métodos tienen como objetivo mejorar tanto el conocimiento del vocabulario como fomentar el desarrollo de la comprensión lectora. Más allá de aprender nuevas palabras, los métodos aspiran a incrementar los conocimientos sobre las palabras através de diversas actividades, significativas para los niños y relacionadas con sus actividades escolares.

¿Qué deberé hacer yo, como padre/madre?

Dado que los participantes son niños, es necesario tener un consentimiento firmado por los padres, antes de empezar el estudio. Además, les pediremos al principio del estudio que rellenen un cuestionario sobre sus datos socio-económicos, nivel educativo y sus actitudes y creencias sobre la lectura.

¿Por cuánto tiempo estará mi hijo participando en el estudio?

En XXX llevaremos a cabo una evaluación de los niños participantes. El entrenamiento durará aproximadamente tres meses XXX.Al final del entrenamiento evaluaremos a los niños de nuevo. Para averiguar el efecto del entrenamiento a largo plazo, volveremos a evaluar a los niños en XXX. Sin embargo, la participación de su hijo/a es voluntaria y usted puede retirarlo de la investigación en el momento que lo desee, sin tener que justificarlo.

¿Dónde y cómo serán las sesiones de entrenamiento?

Las sesiones se realizaránn en la escuela participante, tres veces por semana. Los niños serán divididos en pequeños grupos y cada sesión durará 50 minutos. En las sesiones los niños se dedicarán a tareas diversas en relación con el lenguaje, las cuales serán administradas por un/a asistente de investigación entrenado. Las tareas se les presentarán a los niños, siempre que sea posible, desde una perspectiva de juego, para mantenerlos concentrados y motivados. Los asistentes estarán bajo la supervisión de Clara Gomes y Sylvia Defior durante todo el estudio.

¿Las informaciones recogidas sobre mi hijo/a, mi familia y los resultados del estudio serán tratadas con confidencialidad?

Sí. Todas las informaciones recogidas en este estudio serán archivadas y almacenadas de manera segura y confidencial, garantizando el anonimato.

Informaciones importantes

La participación de su hijo/a en este proyecto contribuirá al avance de la comprensión de los procesos que favorecen la enseñanza del vocabulario a los niños de educación primaria, así como del impacto de este entrenamiento en la comprensión lectora. Por eso, su participación y la de su hijo/a son de gran valor. La escuela recibirá al final del proyecto un resumen con los principales resultados del estudio. En caso de que sea de su interés, puede también requerir una copia de este resumen.

Appendix 7. Parents' questionnaire (6 pages)

Proyecto Entrenamiento de Vocabulario para Mejorar la Comprensión Lectora

CUESTIONARIO PARA LOS PADRES

Universidad de Granada

Estimado/a Padre/Madre,

Como informado al inicio del estudio, le pedimos que rellene este cuestionario sobre sus datos socio-económicos, nivel educativo y hábitos de lectura en la familia.

Agradecemos de antemano su estimada colaboración.

En caso de duda, por favor contacte con la investigadora **Clara Gomes**, Facultad de Psicología, Universidad de Granada (Tel. 958 241958, cgomes@ugr.es).

Por favor, marque solamente una alternativa en cada pregunta.

Parte I: DATOS SOCIO-ECONÓMICOS Y NIVEL EDUCATIVO

Preguntas en torno a los padres

1 ¿Qué edad tiene usted?

- ☐ entre 20 y 30 años.
- ☐ entre 30 y 40 años.
- ☐ entre 40 y 50 años
- ☐ más de 50 años.

2 ¿Qué edad tiene su cónyuge?

- ☐ entre 20 y 30 años.
- ☐ entre 30 y 40 años.
- ☐ entre 40 y 50 años.
- ☐ más de 50 años.

3 ¿En qué trabaja usted?

- ☐ no trabajo.
- ☐ ama de casa.
- ☐ desempleado.
- ☐ Otro trabajo. Diga cuál: _____

4 ¿En qué trabaja su cónyuge?

- ☐ no trabaja.
- ☐ ama de casa.
- ☐ desempleado.
- ☐ Otro trabajo. Diga cuál: _____

5 ¿Cuál es su nivel de estudios?

- ☐ (Antigua) E.G.B.
- ☐ B.U.P.
- ☐ Formación Profesional (Grado medio).
- ☐ Formación Profesional (Grado superior).
- ☐ Diplomatura.
- ☐ Licenciatura.
- ☐ Doctorado.
- ☐ Cátedra.

6 ¿Cuál es el nivel de estudios de su cónyuge?

- ☐ (Antigua) E.G.B.
- ☐ B.U.P.
- ☐ Formación Profesional (Grado medio).
- ☐ Formación Profesional (Grado superior).
- ☐ Diplomatura.
- ☐ Licenciatura.
- ☐ Doctorado.
- ☐ Cátedra.

7 ¿Cuál es el nivel de ingresos mensuales de su familia?

- ☐ menos que 633,30
- ☐ entre 633,30 - 1.000 Euros
- ☐ entre 1.001 - 2.000 Euros
- ☐ entre 2.001 - 3.000 Euros
- ☐ más de 3.000 Euros

8 ¿Cuántas de las personas que viven en su casa reciben ingreso?

- ☐ una
- ☐ dos
- ☐ tres
- ☐ cuatro o más

9 ¿Cuántos hijos tiene?

- ☐ un
- ☐ dos
- ☐ tres
- ☐ cuatro o más

10 ¿Cuántas personas viven en su casa?

- ☐ tres
- ☐ cuatro
- ☐ cinco
- ☐ seis o más

11 ¿Cuántas habitaciones hay en su casa? (sin incluir cocina, baño y salón)

- ☐ tres
- ☐ cuatro
- ☐ cinco
- ☐ seis o más

Preguntas en torno a su hijo

1 ¿Qué edad tiene su hijo/a?

- ☐ 8 y va a cumplir 9.
- ☐ 9 ya los ha cumplido.
- ☐ 10 cumplidos.

2 ¿Cuántas horas a la semana ve su hijo/a la televisión?

- ☐ De 1 y 5 horas a la semana.
- ☐ De 6 a 10 horas a la semana.
- ☐ Más de 10 horas a la semana.

3 ¿Acompaña usted o su cónyuge a su hijo/a cuando éste/a ve la televisión?

- ☐ Sí.
- ☐ No.

4 ¿Asiste su hijo/a a actividades extraescolares?

- ☐ Sí. Diga cuál:_____
- ☐ No.

Parte II: HÁBITOS DE LECTURA EN LA FAMILIA

1 ¿Le gusta leer en general?

- ☐ Sí.
- ☐ No.

2 ¿Crees que le gusta leer a su hijo/a en general?

- ☐ Sí.
- ☐ No.

3. ¿Cuál de estas afirmaciones responde más a lo que piensa?

- ☐ Leo por obligación.
- ☐ Leo para saber más sobre determinados temas.
- ☐ Leo, porque me identifico con los personajes del libro.
- ☐ Leo, sobre todo, para divertirme.
- ☐ Leo para relajar.

3 ¿Cuántos libros lee al mes?

- ☐ un libro o menos
- ☐ dos libros
- ☐ tres libros
- ☐ más de tres libros

4 ¿Qué tipo de lectura le gusta más?

- ☐ novelas
- ☐ biografías
- ☐ novelas históricas
- ☐ libros de ficción científica (aventura, detectives, policíacas, fantásticas)
- ☐ enciclopedias
- ☐ periódico
- ☐ revistas. Diga el título o tema: _____
- ☐ *blogs* en Internet
- ☐ otro. Diga el tipo: _____

5 ¿Hay libros en casa?

- ☐ Sí.
- ☐ No.

6. ¿Habla con sus amigos sobre los libros que lee?

- ☐ Sí.
- ☐ No.

7. ¿Utiliza la biblioteca?

- ☐ Sí.
- ☐ No.

8. ¿Va a librerías?

- ☐ Sí.
- ☐ No.

9. ¿Compras libros?

- ☐ Sí.
- ☐ No.

10. ¿Cual es su libro favorito? _____

11. ¿Lee con su hijo/a?

- ☐ Sí.
- ☐ No.

12. ¿Cuantas veces a la semana lee con su hijo/a?

- ☐ una vez
- ☐ dos
- ☐ tres
- ☐ cuatro o más

13. ¿Cuando lee con su hijo/a?

- ☐ por la tarde, después de la escuela
- ☐ por la noche
- ☐ en los fines de semana

14. ¿Donde lee con su hijo/a?

- ☐ en casa
- ☐ en la biblioteca
- ☐ en un parque

Muchas gracias por su colaboración!

Appendix 8. Test of vocabulary knowledge of taught and control words (VK)

eldel

TEST DE NIVEL DE CONOCIMIENTO DE VOCABULARIO – WPIII

Universidad de Granada

ID: _____ Fecha aplicación ____/____/____

Fecha nacimiento ____/____/____ Edad ____ años y ____ meses

Examinador _____ Colegio/curso: _____

Palabra	Definición	Nivel			
1 ingenio	1) Sí 2) Que si es un mago, hace magia.	1	2	3	4
2 atreverse	1) Sí 2) Que se atreve a saltar desde muy alto.	1	2	3	4
3 insoportable	1) Sí 2) Que uno hace mucho ruido y no puedes hacer nada. 3) Ej: Chillar todo el rato.	1	2	3	4
4 amenaza	1) Sí 2) Si alguien te dice borme esto. 3) Ej: ¡Tráeme un vaso de agua!	1	2	3	4
5 ocultar	1) Sí 2) pero no me acuerdo.	1	2	3	4
6 interminable	1) Sí 2) es una cosa que empieces y que no se acaba.	1	2	3	4
7 recurso	1) Sí 2) Es que si no haces una cosa bien, pues repites. 3) Ej: los deberes.	1	2	3	4
8 superar	1) Sí 2) Si uno va más adelantado que otro, pues el otro se pone en serio y lo adelanta.	1	2	3	4
9 orgulloso	1) Sí 2) Si alguien saca un 10 en un examen su madre está orgullosa.	1	2	3	4
10 vértigo	1) No he escuchado la palabra.	1	2	3	4

11 conquistar	1) Sí 2) Que un hombre ~~que~~ quiere darle algo a un niño y se lo lleva.	1	2	3	4
12 repentino	1) No la he escuchado.	1	2	3	4
13 reconocimiento	1) Sí 2) Pues si conoces a alguien.	1	2	3	4
14 detener	1) Sí 2) Si alguien roba algo la policía lo coge.	1	2	3	4
15 pendiente	1) Sí 2) Si estás mirando a alguna persona todo el rato para que no se exape.	1	2	3	4
16 prestigio	1) Sí 2) Es cuando una persona le presta algo a otra.	1	2	3	4
17 disimular	1) Sí 2) Cuando alguien le dice a otro "tú no sabes nada".	1	2	3	4
18 magnífico	1) Sí 2) Cuando uno hace una cosa impresionante.	1	2	3	4
19 antigüedad	1) Sí 2) Por si una casa está muy vieja, muy antigua.	1	2	3	4
20 demostrar	1) Sí 2) Que si alguien es capaz de demostrar cualquier cosa.	1	2	3	4
21 experto	1) Sí 2) Que hace cosas que nunca nadie ha ~~ha~~ hecho.	1	2	3	4
22 fenómeno	1) Sí 2) Que si hace algo bien, te dice "eso es fenomenal".	1	2	3	4

23 exponer	1) Sí 2) Es poner algo en un sitio.	1	2	3	4
24 remoto	1) No la he escuchado.	1	2	3	4
25concepto	1) No la he escuchado.	1	2	3	4
26 suponer	1) Sí 2) Si pones muchas cosas rápidamente.	1	2	3	4
27 tierno	1) Sí 2) Si alguna cosa está muy caliente.	1	2	3	4
28 maniobra	1) Sí 2) Si estás haciendo una cosa muy rápido.	1	2	3	4
29 convertirse	1) Sí 2) Que si eres una persona, te has convertido en monstruo.	1	2	3	4
30 evidente	1) Sí 2) Que sólo puedes hacer una cosa.	1	2	3	4