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(How) Do work placements work? Scrutinizing the quantitative evidence for a theory-driven future research agenda

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ABSTRACT

While supervised work placements are increasingly popular in higher education, evidence regarding their effects on career outcomes remain somewhat sparse and atheoretical. The aim of this systematic literature review is to evaluate the effectiveness of placements for career outcomes and to identify any underpinning core psychological processes and to offer a theoretically grounded framework for future research. Drawing on transition theory (Schlossberg, 1981) and career construction theory (Savickas, 1997), we argue that supervised work experiences are central transition experiences that enable social learning processes and trigger changes in a person's identity development as a professional, thereby increasing career resources and employability which in turn affect future career outcomes positively. We screened 2394 systematically selected abstracts across several databases and disciplines. Only quantitative studies that either offered a control-group or a longitudinal design were included, resulting in an in-depth review of 40 studies, applying a rigorous evaluation protocol. Placement participation elicits an overall positive (but small) effect on career outcomes: Graduates who completed a work placement found employment more quickly. Work placements also changed students' perceptions of self-efficacy, their knowledge, skills, and attitudes. We suggest that these changes could be seen as indicative of the proposed social learning processes and identity changes that positively affect career resources. Our review points to several gaps in the literature, and building on existing career theories, we develop a theoretical model and offer new avenues for future research to integrate the heterogenic field of placement research and inform career research in other areas.

1. Introduction

Undeniably, first work experiences have a transforming influence on individuals' future careers and employability (Roberts, Caspi, & Moffitt, 2003) and transitions from higher education to employment have long been of scholarly and practical interest. Yet, we need a better understanding of the processes that best prepare undergraduates for the world of work. Work placements or internships provide opportunities for 'trial transitions' to the world of work, given their structured and educationally embedded set up. According to non-peer reviewed reports, the employability benefits of placements are impressive: for example, the annual graduate survey by

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the U.S. National Association of Colleges and Employers reported that 56.5% of students who had completed an internship, co-operative education or work experience[2] received at least one job offer, compared to only 36.5% of those who had not (NACE, 2015); in the UK similar reports suggest that one third of all entry level positions with graduate employers are taken by graduates who completed an internship or a work placement (High Fliers Research, 2015).

Given that career research covers transitions into employment from a newcomer perspective extensively (e.g., Nifadkar & Bauer, 2016) and the widespread belief in the effectiveness of work placements, there is a curious absence of academic research (e.g., Moores & Reddy, 2012) which would elucidate the potentially transformational changes that individuals undertaking a placement might experience. Initial literature searches to scope existing research in the field[3] showed that relevant studies are applied in nature, focusing on practical outcomes of placements (e.g., Aggett & Busby, 2011). Such scoping searches elicited not one publication synthesizing the work placement literature with adequate methodological and theoretical rigor – echoing Ryan, Toohey, and Hughes (1996) who observed that lack of good quality research on the 'practicum' makes it difficult to reach any conclusions regarding their potential contributions. A brief and atheoretical US review concluded that both students and employers value internships, but that success is contingent on various factors including the level of student participation, mentoring and support provided (Knouse & Fontenot, 2008). Specific empirical studies tend to retrospectively report the success of work placements by asking graduates or interns about their experience (e.g., Clayton & Thessin, 2016; Dommeyer, Gross, & Ackerman, 2016). A widely cited qualitative study of employability finds that graduates and employers consider a) business-knowledge and skills, b) interpersonal competencies, and c) work-based experience and learning as absolutely crucial; UK students who had taken a placement also reported more positive learning from work placements than students from countries where such experiences are less common and less formalized (Andrews & Higson, 2008). Our theoretically framed systematic review has the following objectives: first, to synthesize the evidence for whether placements affect subjective and objective career outcomes; second, to review mechanisms and constructs that contribute to career outcomes following the placement experience; and third, to develop a theoretically informed framework that provides a lens for understanding existing findings and guiding future research.

1.1. Work placements as a 'trial run' career transition

To ground our review, we revisit the purpose and format of placements to define their unique characteristics setting them apart from other employment transition experiences such as project-based newcomer training (e.g., Zhu, Tatachari, & Chattopadhyay, 2017). University-supported work placements constitute a unique hybrid experience of education and work as students take time out from their education to work full-time in an organization. Such a work placement is fixed-term, embedded in an overarching structure (e.g., the University/College curriculum, often supported by a member of academic staff), and afterwards students return to education. Drawing on Schlossberg's (1981) theory, we argue that education-facilitated placements are crucial transition experiences that can help career adaptation and development of career resources. She frames transitions as changes in assumptions about the world, the self, behaviors and relationships (Schlossberg, 1981) which, as in the case of placements, can be anticipated and planned or ad hoc life events.

Pre-planned placements embedded into a wider education experience are opportunities for career exploration (Praskova, Creed, & Hood, 2015) and may shape short and longer-term career expectations and attitudes with an inbuilt 'safety net' as a 'trial-run transition'. The student temporarily undertakes full-time and (often) paid employment to learn about work in a new environment and about themselves. This process requires adaptation and engagement in exploration of new skills and knowledge. Different to the situation of regular newcomers to an organization, the outcome of the transition process during a work placement is known – the placement naturally comes to an end and the student moves back into higher education. Therefore, work placements offer an opportunity to research education-to-work transitions and the intra-individual changes this transition can trigger in a 'safe' transition environment without the risks associated with many regular workplaces (such as job insecurity, attrition because of poor fit with the organization). Viewing placements as transitions has theoretical and practical implications.

According to career construction theory (Savickas, 1997), career development is driven by various transitions (i.e., from school to work), with the goal of person-environment integration. Given that today's career trajectories are increasingly volatile and involve more frequent transitions between occupations, as well as organizations (e.g., Chudzikowski, 2012), more knowledge about the transition from education to work and back is desirable. A better understanding of the processes that take place when individuals participate in work placements can help us expand our knowledge on related, yet different employment transitions.

1.2. Theoretical perspectives on work placements and career outcomes

Many well-established career theories emphasize the importance of career resources as predictors of employability and career success (e.g., Arthur, Claman, & DeFillippi, 1995; Fugate, Kinicki, & Ashforth, 2004; Hirschi, 2012). According to Hirschi's (2012) career resources model, which comprehensively summarizes different conceptualizations of resources for self-directed career management, the more *human capital*, *social*, *psychological and identity resources* someone has, the better for their self-directed career management. *Human capital resources* are enhanced by learning new knowledge, skills, and abilities and gaining experience. The

[2] These terms tend to be used interchangeably in the literature and reports.

[3] We undertook a pilot search using the EBSCO host across the databases PsycINFO, Business Source Complete and Medline using a number of search term variations (e.g., placement, internship, employability, work, etc.) and the terms review, meta-analysis, systematic review.

importance of new knowledge and experience is also echoed by the three-stage model of future organizational socialization (Wendlandt & Rochlen, 2008), which postulates that this can help with the anticipation of and adjustment to a future job. In terms of Blumberg and Pringle's (1982) ability, motivation and opportunity model, placements offer an opportunity to perform, in turn affecting the willingness and capacity to perform. Placements are also opportunities for enhancing a person's *social capital resources* by meeting and interacting with new and different people. Placement experiences thereby enable relationship learning (Allen & Eby, 2003), which is also beneficial for adaption. They widen an individual's network and set of available role models and give opportunity for vicarious learning, by allowing to observe others in the workplace (Gibson, 2004). Social capital or 'knowing whom' is a component of career intelligence theory, alongside the career competencies of 'knowing what' and 'knowing how' (Arthur, Khapova, & Wilderom, 2005). Career theories also tend to agree on the importance of *psychological and identity-related resources:* self-efficacy has a core role in social cognitive career theory (Lent, Brown, & Hackett, 1994), social learning theory of career decision-making (Krumboltz, Mitchell, & Jones, 1976), the career confidence element of career construction theory (describing an individual's belief in themselves and their abilities to attain career goals, Savickas, 1997, 2012), the socialization resource model (Saks & Gruman, 2011), among others. Indeed, individuals with more psycho-social resources have been found to better adapt to future career transition experiences (Rudolph, Lavigne, Katz, & Zacher, 2017).

Through the lens of these classic career models, placements can be understood as an opportunity for learning experiences and the development of career resources. We draw attention to the transitional, yet fundamentally identity changing nature of placements and propose that the acquisition of career resources is not a passive process. They take place against the background of constructing new ways of seeing oneself (Schlossberg, 1981). In this rather tumultuous phase, a person has to be receptive and able to integrate the newly learned experiences into meaningful knowledge and experience structures. We propose that a re-structuring of identity has to take place alongside the learning experience in order to achieve those career resources. However, traditional career approaches are less focused on the process of *how* people accumulate resources.[4] This is an omission, as without knowing when such experiences are received well (in the sense of being integrated into a novel identity structure), it is difficult to determine whether and if so, how, placements will lead to successful career outcomes.

Work placements offer students the opportunity to try out and learn new skills in novel social contexts. Such 'trial-run transitions' provide information about one's own capabilities based on new social comparisons and feedback gleaned from others (see also Herr, 1997; Ibarra, 1999), thereby widening, enriching and clarifying a person's spectrum of social self-categorizations in order to make sense of the new experiences and tasks they have to carry out in their placement. This in turn may lead to a changed cognitive, affective and behavioral understanding about who one is and could be (e.g., Ashforth, Harrison, & Corley, 2008; Ashforth & Schinoff, 2016; Tajfel & Turner, 1986). Together, the learning processes and identity change will influence the gain in career resources.

1.3. Placements as opportunities for changes in career resources through social learning and identity development

Based on the extant literature, we postulate three potential mechanisms to explain how intertwined identity and social learning processes are and how these affect the acquisition of career resources: Placements as (a) places of learning and identity change, (b) social environments of identity validation and (c) experiences shaped by possible identity enactment.

First, novel work experiences offer opportunity for learning cycles where individuals experience mismatches between what they do and how they think of themselves (Pratt, Rockmann, & Kaufmann, 2006). Some of these experiences can be quite unsettling: Failures, for example, can serve as a particular trigger for identity construction as they entail experiences of 'sensebreaking' (Ashforth et al., 2008) and learning (Bandura, 1982). Other experiences might lead to more nuanced smaller daily transformations (see Selenko et al., 2018). Simply by practicing new behaviors in a new environment people will experience changes in meta-knowledge about their capabilities to execute certain behaviors. The enactment of new behavior will enhance generalized self-efficacy (Alvesson & Willmott, 2002; Bandura, 1982, p. 122) but also lead to the discovery of new aspects of oneself (Selenko et al., 2018). In both instances, placement students will tailor their understanding of who they are to their work; a process that has been called identity customization (Pratt et al., 2006).

Second, placements offer opportunity for novel social encounters, asking for a redefinition of a person in a new social environment, which then act as a source of validation for the newly developed identity (Pratt et al., 2006) as colleagues, supervisors and customers offer feedback and potentially valuable validation for performance and novel forms of identity. Others can also act as role models and sources of vicarious learning (Bandura, 1982; Gibson, 2004) thus widening the placement student's awareness of 'possible selves' which they could enact themselves (Ibarra, 1999). Those social contexts in turn enable a gain in social and socialization resources (e.g. relationship learning; Allen & Eby, 201; career-socialization resources; Saks & Gruman, 2011; social capital or 'knowing whom'; Arthur et al., 2005, Fugate et al., 2004).

Third, the placement experience itself will be shaped by those newly developed identities, as identities play a vital role in goal selection, the orientation of future learning behavior and the selection of "opportunities to perform" (Blumberg & Pringle, 1982). Placement students will be focused on bringing their learning experiences in line with their novel identities (e.g., Ashforth et al., 2008;

[4] It needs to be noted that most career theories acknowledge gains in identity and self-efficacy as resources, but they do not recognize the fundamental dynamic changes these gains set in motion. The development of identity or a sense of self, of who one is and could be, is seen as being essential for career outcomes such as employability (Fugate et al., 2004), self-directed career management (Hirschi, 2012), career growth (Latack & Dozier, 1986), career-life preparedness (Lent, 2013) and given an important role in other models (Blumberg & Pringle, 1982; Wendlandt & Rochlen, 2008).

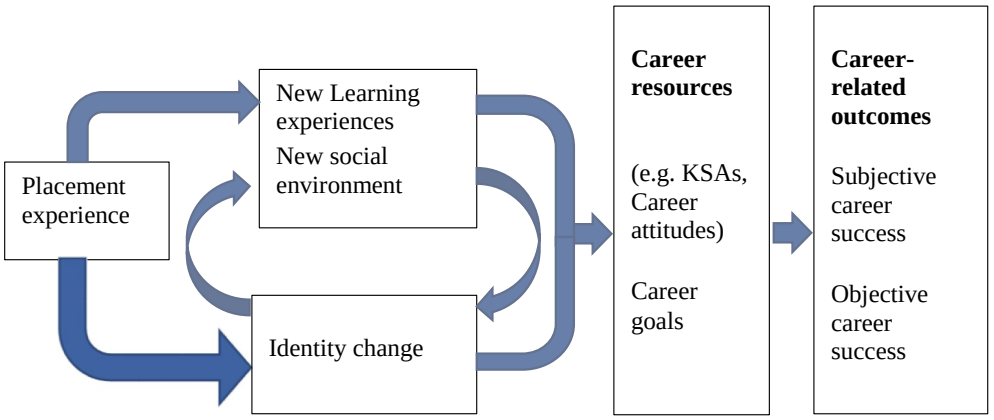

Fig. 1. Theoretical model depicting how the interplay between social learning processes and identity changes influences career resources and career outcomes.

Pratt et al., 2006). These effects will not be limited to the placement. By shifting understandings of who one is, notions of who one could be in the future are altered as well (Markus & Nurius, 1986), which in turn may lead to a change in career goals and behaviors. Individuals who have a clear understanding of who they are and have confident and positive judgments of their capabilities are likely to challenge themselves with ambitious goals (see e.g., Pratt et al., 2006; Sun, Song, & Lim, 2013). Changes in attitudes including those towards one's study or subject area are likely to be reflective of a shift in underlying value structures and new understandings of the self due to identity change (Burke, 2006). Although not specifically assessing identity change, Kim and Park (2013), for instance, found that positive social experiences during a placement led to more positive attitudes towards the tourism industry. Positive social encounters are likely to serve as identity confirming and validating experiences, enabling an identity change.

Drawing on these theoretical notions of identity change and learning, we propose that placement experiences can be conceptualized as transition experiences that bring about social learning processes and changes in a person's identity development – central processes that contribute to changes in career resources and employability. Simply put, by doing something new, being someone new, and getting recognized as someone new, a placement student's understanding of themselves and their skills and abilities (i.e., their self-efficacy) will change.

We therefore propose a theoretically grounded model in which the placement experience leads to an increase in career resources through identity and social learning processes, which in turn affect career outcomes. We explicitly distinguish between subjective (e.g., satisfaction with one's career) and objective career success (e.g., Heslin, 2005; Ng, Eby, Sorensen, & Feldman, 2005).

Fig. 1 depicts how the interplay between social learning processes and identity changes influences career resources and career outcomes.

Given our previous observation about the largely atheoretical placement literature we use this framework as a theory-guided structure to synthesize the evidence for whether work placements affect subjective and objective career outcomes from a career resource- and process-based perspective. We do not expect any primary study to explicitly test these theoretically derived mechanisms, but we will inspect whether there is evidence for at least some elements of the framework.

We commence through an inductive approach to structure constructs emerging from the empirical studies to examine which processes, constructs and outcomes relevant empirical placement studies analyze. This is followed by an abductive approach (e.g., Van Maanen, Sørensen, & Mitchell, 2007) whereby we interpret empirical findings to generate plausible explanations (where do results converge or diverge with our theoretical model?) to offer suggestions for a future research agenda.

2. Method

We focus on 'work placements' as non-integral, voluntary and supervised work experiences undertaken as part of degree programs excluding highly structured compulsory placements (undertaken as part of for instance medical or teaching degrees) and part-time casual work experiences which are not integrated in a curriculum to ensure some consistency across the primary studies discussed. Our stepwise systematic review drew on guidelines from management studies and industrial and organizational psychology (Denyer & Tranfield, 2009; Rojon, McDowall, & Saunders, 2011). We restricted inclusion to quantitative papers with either a longitudinal design or a comparison group of students who did not participate in a work placement[2] to ensure consideration of quantifiable change within individuals participating in work placements to differentiate from other ongoing life changes (Petticrew & Roberts, 2008). We undertook pilot searches (Rojon et al., 2011) using a preliminary search protocol and different exploratory combinations of search terms (e.g., PsycINFO, Business Source Complete) and screened the results regarding topic relevance, terminology and frequently cited studies to identify the most commonly used terms in this subject area, as well as location of core literature. Second, we interviewed seven British subject matter experts two of whom were responsible for university education at the management level; three academics with long-term, hands-on experience in administering work placements and embedding placements in the University curriculum, and two academic support staff involved with organizing and managing the placement experience. The interviews

covered topics such as locations to identify relevant studies, applied terminology, as well as gaps in existing knowledge.

We then refined the preliminary search protocol, concluding in three search strings. The first string included terms relevant to the placement terminology (e.g., “industrial placement”, “internship”, “sandwich placement”) and the second string restricted the search to the University context using search terms such as “student” or “university”. The last search string covered terms relevant to psychological factors (e.g., “confidence”, “achievement”, “psychological”), as well as employability related terms (e.g., “employability”, “employment”, “career”); the full protocol is available from the first authors on request.

To ensure inclusion of literature from several disciplines (e.g., management, educational and psychological research) we screened these databases: ProQuest: ASSIA, British Education Index, ERIC, Australian Education Index; Business Source Complete; PsycINFO; Medline; Scopus; Social Science Citation Index. Our inclusion criteria were studies (1) published between January 1990 and January 2017 to capture the key research conducted in the past 25 + years and ensure contemporary relevance, (2) published as a peer-reviewed journal article, (3) with full-text retrievable in English, (4) relevant to our research questions (how effective are placements, what are psychological factors and processes related to their effectiveness) and (5) either longitudinal or including a non-placement control group (cf. Petticrew & Roberts, 2008) as such designs provide more robust evidence for quantifiable change (this criterion was assessed through full-text reading if all other criteria were met). As our systematic review aims to go beyond anecdotal evidence to evaluate the effectiveness of work placements, we focus on quantitative studies only. In addition, to ensure that the effects we are looking at indicate changes due to placements, we only included studies that allowed for a comparison – either in the form of before/after comparisons (longitudinal studies) or between placement and non-placement students**.** We considered these studies through an iterative process, where we conferred within the research team through dual coding and peer review of inclusion criteria and relevance where there was doubt about for instance the nature of the placement as such.

After removing duplicates across databases, our search produced 3956 results. Based on the recommendations by Rojon et al. (2011), the fourth author screened the results by title to remove articles clearly irrelevant to our research questions and inclusion criteria (e.g., focus on obligatory medical skills or teaching training; adult work placements for unemployed job seekers), reducing the number to 2394 journal articles. Potentially relevant studies were retained and examined further. In the next iteration of study selection, we screened the remaining 2394 results by title *and* abstract, again identifying and removing studies that were irrelevant; each author screened an equal share of results. Before starting the screening by title and abstract, we selected 40 search results randomly (i.e., 10 papers from each authors' screening allocation) in order to ensure agreement in terms of inclusion. For each of these 40 articles, all authors screened the title and abstract and decided whether the respective article should be included in the review. We subsequently discussed any disagreements in these inclusion decisions within the research team and further clarified the inclusion criteria to resolve the disagreements. The screening process by title and abstract resulted in the exclusion of 2058 journal articles, leaving 336 articles for full-text screening (full-texts were retrievable for 322 articles). Screening the full-text of each article to determine its ultimate fit with the inclusion criteria, we identified 40 relevant articles for our review.

2.1. Data extraction

We created a data extraction form (Petticrew & Roberts, 2008) to code the reviewed studies, including steps of refinements and clarifications after each team member coded an initial subset of studies. The extraction form covered basic details of each study (e.g., publication year, study design, methods), as well as more specific details relevant to answering our research questions, such as study objectives, theoretical grounding, examined variables and main findings. The studies were allocated evenly across the research team members; each study was read repeatedly for coding. Arising ambiguities regarding the coding procedure were regularly discussed and resolved within the research team by clarifying and extending coding categories.

2.2. Classification of constructs and guiding structure

We first took an inductive, then an abductive approach to reviewing the papers. This stepwise process allowed for openness towards unforeseen placement processes and outcomes not anticipated in the theoretically derived model. We extracted all variables that were examined in the studies as being affected by placements and grouped them into meaningful categories. Next, three of the authors separately grouped the extracted variables into meaningful categories. Some of these groupings were relatively straightforward (for example, variables such as “degree classification” (Santer, 2010), and “final year degree mark” (Green, 2011) were grouped by all authors into the same category), while on others we disagreed. We discussed our disagreements and agreements, with the goal of reaching a complete yet parsimonious categorization of the extracted variables (i.e. avoiding ‘loner’ categories with only one or two different variables in them). We then created meta categories to summarize the extracted categories. We repeated this process until consensus was reached.

We acknowledge that there is some overlap between some of the meta-categories as in career theories, for instance, attitudinal variables (such as job attitudes) can equally be an antecedent of other career-relevant constructs or a measure of subjective career success (outcome). Where possible from the information provided in the primary studies, we have endeavored to clarify such relationships. Academic achievement, for example, was treated as an outcome variable in several studies and could be conceptualized as a pre-employment proxy for career success. Career models tend to review it as a career resource (e.g. Hirschi, 2012). As it is more distal to career outcomes, we discuss it separately from career outcomes.

Table 1 presents the extracted variables as meta-categories (attitudes towards the subject and career, self-efficacy, self-esteem, specific knowledge skills and competencies), academic achievement, subjective (e.g., satisfaction with one's career) and objective career outcomes (e.g., salary) (Heslin, 2005; Ng et al., 2005). In addition, we recorded any moderators of the placement to career-

Table 1
Extracted variables affected by placements, their grouping into meta-categories, and mapping to career theories.

Extracted variables (examples)	Meta category	Career theories considering the extracted variables
Attitudes towards internship and its value, internship satisfaction, affect and attitudes towards subject discipline, attitudes towards work aspects, attitudes towards quality of work life, values clarification	Attitudes towards subject, work or placement and work values	"Knowing WHY" (Arthur et al., 2005; Parker, Khapova, & Arthur, 2009), identity resources (Hirschi, 2012), anticipation element of Wendlandt and Rochlen's (2008) 3-stage model of organizational socialization, career identity (Fugate et al., 2004), willingness to perform self-image, ego involvement (Blumberg & Pringle's, 1982)
Career decidedness, career decision-making, career goals change, career insight, career beliefs	Career attitudes	
Self-efficacy (general and regarding subject discipline), self-esteem, perceived control, perceived importance of abilities to conduct the task, perceived work experience, educational preparedness for work, personal development, learning motivation, level of learning, perceived qualification	Self-efficacy, self-esteem, confidence	Social cognitive career theory (Lent, 2013; Lent et al., 1994), social learning theory of career decision making (Krumboltz et al., 1976) 'cognitive constructivist' model (Hacket & Betz, 1981), "Knowing HOW" (Arthur et al., 2005; Parker et al., 2009), human capital resources, psychological resources (Hirschi, 2012); human capital, personal adaptability (Fugate et al., 2004); career adaptability (Savickas, 1997); ability and motivation (Blumberg & Pringle, 1982); part of the 4 career-socialization resources (Saks & Gruman, 2011), adjustment & achievement element of Wendlandt and Rochlen's (2008) 3 stage model of organizational socialization
Task related: Problem solving, professional activities, cognitive style, communication skills, critical thinking, goal progress, independent thinking, general and job specific knowledge, skills, abilities, research skills, specific abilities and knowledge, tacit knowledge, timeliness, overall functioning	Knowledge, skills and competencies	
Interpersonal and contextual: Leadership, social and relationship skills, cultural skills, intercultural effectiveness, moral judgment and reasoning, interpersonal and social attitudes (e.g., tolerance of others, attitudes towards ethnic groups and racism, civic attitudes)		
Experience of work and organization (supervisor support), type of placement job, job characteristics, university's image, career support structures	Contextual and situational conditions	Opportunity in Blumberg and Pringle's (1982) opportunities capacities and willingness model of performance
Grades (on academic program)	Academic achievement	Human capital (Fugate et al., 2004; Hirschi, 2012)
Career advancement, employment status (in work or not), invitation to job interview, length of time to secure employment after graduation, likelihood of accepting an offer, likelihood of receiving an offer, management or leadership role, salary, type of employment	Objective career-related outcomes	Objective career success (Heslin, 2005; Ng et al., 2005)
Expected employment, perceived appropriateness of job, perceived value of internship for career, career satisfaction, career schedule, perceived career success, job satisfaction, job involvement	Subjective career-related outcomes	Subjective career success (Heslin, 2005; Ng et al., 2005)

related outcome relationship, be that in the form of person variables, organizational factors or aspects of the wider work environment drawing from Blumberg and Pringle's (1982) model, which highlights the interplay of personal factors (ability, motivation) and opportunity in enabling effective work performance.

We used these meta-categories to structure our review through a realist narrative synthesis (Pawson, 2006) suited to diverse and multi-disciplinary fields (Madden, Bailey, Alfes, & Fletcher, 2017) to uncover explanatory mechanisms. Taking an abductive approach (e.g., Van Maanen et al., 2007) we then interpreted empirical findings guided by the theoretical model (Fig. 1).

3. Results

Most studies took a pragmatic approach to evaluating the effectiveness of work placements but were less focused on detailing theoretical frameworks or empirical approaches, so in many cases we had to infer relevant psychological constructs. The approaches taken and results are summarized in the Appendix Table 1 and outlined below. We first discuss the very few findings regarding the placement itself and then structure our synthesis of the results using our meta-categorization of relevant constructs (see Table 1). We examine the potential impact of placements on psychological constructs and career success and consider associated psychological processes.

3.1. The placement context and experience

The focus and implementation of work placements varied considerably as evident in the terminology which refers to internships (15), cooperative education (12), placement or work placement (10), work integrated learning (2), professional training year (1) or practicum (1); some studies used a combination of terms. The level of integration of placements into academic study varied. Programs of cooperative education interspersed weeks of blocked teaching with weeks of one or more industry placements. Where reported, placements lasted between 10 weeks and 16 months. In so-called sandwich degree courses students embarked on a placement year returning to full-time study afterwards. Finally, there were work placements running in parallel to the academic education, such as professional internships, for example taking place each week for a certain amount of hours over the duration of a year. Where such information was available, internship placements lasted between 2 and 12 weeks (median: 12 weeks). The majority of reviewed studies (22) did not include any information about the nature, duration, or frequency of the placement experience; only two primary

studies provided context beyond the duration and general organization in relation to the overall educational program.

3.2. Changes in psychological constructs

3.2.1. Concepts of self-efficacy, confidence and self-esteem

Our synthesis elicits mixed evidence for purported surges in confidence as placements do not appear to affect general self-esteem (e.g., Arnold, Auburn, & Ley, 1995; Basow & Byrne, 1992), although there are positive effects for specific aspects of such as work-related self-efficacy (Bates, Thompson, & Bates, 2013; Hayward & Horvath, 2000), venturing self-efficacy or technology application self-efficacy (Lucas, Cooper, Ward, & Cave, 2009). McCormick, Bielefeldt, Swan, and Paterson (2015) found that participation in an internship was associated with higher self-efficacy about sustainable engineering (SE) and lower negative feelings about SE, but no difference in SE value or overall affect. The quality of the placement experience clearly matters: Arnold et al. (1995) found that placements had no effect on self-esteem but on self-rated abilities; autonomy and social support provided on a placement were, however, associated with an increase in both self-esteem and self-rated abilities.

3.2.2. Knowledge, skills and competencies

Documenting a range of outcomes, Gilbert, Banks, Houser, Rhodes, and Lees (2014) took a longitudinal approach comparing students across three time points during and after placement and found positive differences in specific skills (e.g., application of classroom knowledge) and generic skills (e.g., classroom evaluation). Interestingly, mentor evaluations were consistently higher at the end of the program than self-evaluations, suggesting a difference between skills learned and confidence therein. For example, enhanced moral reasoning might be a specific outcome targeted by a placement that involves an ethical dilemma training (Craig & Oja, 2013), however whether such reasoning could also be improved by a placement not offering such specific training remains unclear. Similarly, the observed improvement of managerial competencies might be inherent to a specialized placement focusing on enhancing these among hospitality students (Walo, 2001), enhanced multicultural skills might have been the result of a placement taking place in a multicultural community center (Simons et al., 2012).

We contend that it needs to be considered to which extent any outcomes are specific or can be generalized to other similar placement experiences. Smith-Eggeman and Scott (1994), for example, argued that participating in a placement generally enriches a participant's repertoire of social contacts, thereby enhancing their tolerance for diversity in general; likewise improved 'functioning in social institutions' in comparison to non-placement students might be applicable to placement experiences in general (Van Gyn, Cutt, Loken, & Ricks, 1997). In other words, the applied contextualized placement learning experience itself might be of general value, independent of the specific content or set-up of the placement (Green & Farazmand, 2012).

3.2.3. Attitudes towards subject, work or placement and work values

There was evidence that placements changed students' attitudes towards their overall degree program and their career, which might be indicative of a shift in evaluative standards due to a change in underlying understandings of the self (Saks & Ashforth, 1996). Attitude change towards the degree program varied where in some studies placement students reported that they were less satisfied with their academic programs and complained about low skill utilization (Auburn, Ley, & Arnold, 1993), and lack of guidance on 'general skills' (writing reports, communication, providing information, organization of work; Scholz, Steiner, & Hansmann, 2004). Yet such evaluations did not necessarily have negative long-term consequences: in comparison to students who did not attend a placement, students still rated their general skills more positively than they did before. The negative effect on student program evaluations might hence be temporal – if asked a year after graduation, placement students evaluated their degree program as more positively than students who did not participate in a placement as part of their degree (Rowe, 1992); although one cannot of course discount post hoc rationalization effects. Another study (Green & Farazmand, 2012) indicated improved attitudes of placement students towards their study degree, and overall better learning experiences (although project grades did not differ).

3.2.3.1. Career-related attitudes. Placement students initially report to have more difficulties in deciding between different career paths of similar appeal than non-placement students (Auburn et al., 1993), fewer career plans (Basow & Byrne, 1992) and no more confidence in fitting to a certain career path (Callanan & Benzing, 2004). Once placement students entered employment, any worry about the scheduling of certain milestones in their career diminishes (Moores & Reddy, 2012). Auburn et al. (1993) argue that any initial undecidedness might lead to more openess towards a broad range of career related information. Yet it is important to note that there might be situations where career attitudes remain relatively stable: Ahmad, Ismail, and Anantharaman (2015) considered several variables comparing internship and regular students but found no differences for intrinsic and extrinsic interest, subjective norms, and commitment intentions.

3.3. Academic achievement and career-related outcomes of placements

Placements appear to have overall positive effects on academic achievement, subjective (how satisfied graduates were with their job or careers) as well as objective career-related outcomes (e.g., time it takes to find employment, time to advance in one's job, first salary earnings). Results were not consistent, however, pointing to possible contextual factors and methodological weaknesses in the study designs.

3.3.1. Academic achievement

Evidence for any positive effects of placement participation are mixed: Some studies showed no significant difference in course/module performance (comparing placement and non-placement groups: Green & Farazmand, 2012; comparing within and between-students: Hauck, Allen, & Rondinelli, 2000; pre- and post placement: Iqbal, 2007) while others indicated that placement students obtained higher grades than non-placement students (Brooks & Youngson, 2016; Gardner, Nixon, & Motschenbacher, 1992; Green, 2011; Santer, 2010; controlling for previous academic performance: Mansfield, 2011). Hauck et al. (2000) examined changing perceptions of coursework, changing perceptions of internship and career and perceptions of quality of work life and pay as an outcome variable, but did not find any significant differences pre and post placement between any of these (pay was also compared between groups). Predictor-criterion alignment could account for some of the diverse results: for example, Green and Farazmand (2012) examined specific grades obtained on a live-case project as part of a marketing course, considering student (self) and instructor evaluations. Participation in a relevant placement would have increased domain-specific interest and knowledge. Placement students in Iqbal's (2007) study studied pharmacology and most of the placements were in the field. Santer (2010) also found that placement students were more likely to achieve higher grades in their final degree and were more likely to progress to PhD programs (no significance test was carried out comparing the two groups however). Tanaka and Carlson (2012) observed that in some cohorts final year GPA was higher for placements students but not in others; not surprisingly first year GPA was the strongest predictor of final year GPA. Yung, Lam, and Yu (2015) also found that placement participation predicted positive changes in academic performance. Only one study (Crawford & Wang, 2015) controlled statistically for prior academic achievement finding that UK sandwich students fared better than full-time students. For Chinese students, placement participation also predicted good academic achievement, whereas results for international students were inconclusive, which may point to a self-selection effect, rather than direct effects of the placement.

3.3.2. Objective career-related outcomes

Callanan and Benzing (2004) reported that final year placement students were 4.43 times more likely to have secured a job than non-placement students at the end of their studies (also when controlling for number of job interviews). Graduates who found a job with their co-op employer were also less likely to change job within six years of graduating; the overall relationship between completing a co-op program and turnover was not significant however (Wessels & Pumphrey, 1995). Placement graduates received more job advancements and promotions (pay, increase in responsibility, or increase in better job match) over a period of five years after completing their studies, compared to non-placement graduates, but not if they were employed by their placement employer (Wessels & Pumphrey, 1995). Nunley, Pugh, Romero, and Seals (2016) contribute evidence through a quasi-experimental approach coding student résumés, finding that industry relevant internships improve job prospects. Rathbun-Grubb (2016) showed that students who complete internships are more likely to secure jobs within three months of graduation, and are more likely to engage in professional leadership and development activities. Park (2015) showed that internship participation has positive effects on employment, preferred employment and employment in prestigious organizations. Taylor and Hooley (2014) compared participation in a skill building module plus placement versus module only on employability; of those participating in the module 70% gained employment (39% for those who did not take part), taking part in a placement also resulted in 79% gaining employment.

Results regarding income following graduation were mixed: Placement program graduates earn more money in employment after graduation according to some studies (e.g., Moores & Reddy, 2012; Rowe, 1992; Wessels & Pumphrey, 1996), while several other studies did not find a difference compared to non-placement graduates (Gardner et al., 1992; Siedenberg, 1990; Wessels & Pumphrey, 1996). Extraneous factors might account for equivocal observations as wages earned while still at university and years of previous work experience could cancel out any wage differences between placement and non-placement students in the first job after graduation (Siedenberg, 1990; see also Rowe, 1992: when comparing graduates who graduated the same year, differences were found, but not when comparing those who entered the program the same year). Also, pay was influenced by academic achievement: For example, Moores and Reddy (2012) found that graduates who completed a placement and received a good grade for their degree (2:1 in the UK) earned a higher salary compared to graduates who had not completed a placement. No difference in salary was observed for graduates who were awarded a satisfactory grade for their degree (2:2). More research is needed to clarify the relationship between placement and future wages.

3.3.3. Subjective career-related outcomes

Two studies indicated that there might be a link between placement participation and subjective career success as placement graduates rated their work in employment after graduation more highly than non-placement graduates (Auburn et al., 1993), were more satisfied with their career and also felt more ahead with their career schedule than non-placement students (Moores & Reddy, 2012). Rowe (1992), however, found that students who completed placements did not experience more job satisfaction, organizational commitment, work involvement and satisfaction with pay (despite earning higher salaries) once in the workplace, compared to non-placement graduates. This is a gap in the literature, examining how subjective evaluations are linked to the placement and subsequent job experience respectively (for instance, a placement might not be an entirely positive experience, but later on prove useful).

3.3.4. Strength of the relationships

In order to examine the identified relationships more closely, we extracted effect sizes where possible as few primary studies provided these and less than half (42.5%) provided the necessary statistical detail to calculate them. Most of the computable effect sizes stem from cross-sectional studies examining group differences; calculating effect sizes in longitudinal studies was less frequently

feasible. For psychological factors, the calculated effect sizes mostly ranged from very small to medium; Hayward and Horvath (2000) found a large effect for the link between placement participation and enjoyment of learning new job skills. In terms of academic achievement, we found a wide range of effect sizes from very small effects (Gardner et al., 1992; Hauck et al., 2000) to large effects of placement participation (e.g., Green, 2011; Santer, 2010). The effect sizes extracted in relation to employment varied between very small to medium, with effect sizes being smaller for getting a graduate-level employment (e.g., Moores & Reddy, 2012; Park, 2015) than for getting any job (e.g., Callanan & Benzing, 2004; Park, 2015). Barely any effect was found for placement participation and salary (Gardner et al., 1992).

3.4. Contextual and situational variables

Our review uncovered several contextual and situational variables given that the nature and quality of the placements seems to matter (i.e., the experience of work and organization, e.g., Auburn et al., 1993; Williams, Sternberg, Rashotte, & Wagner, 1993; the type of placement job, Feldman & Weitz, 1990). Three studies pointed to the importance of autonomy (Arnold et al., 1995; Auburn et al., 1993; Feldman & Weitz, 1990): higher levels of autonomy were linked to increased self-esteem and perceived abilities at the end of the placement (one was a longitudinal study with three points of measurements). Arnold et al. (1995) also observed that social support posititvely impacted self-esteem and self-rated abilities.

Moreoer, the provider's focus as a placement including their employability climate and career support structures seemed to matter although such contextual factors were rarely examined explicitly or controlled for in the reviewed studies. Wessels and Pumphrey (1996) found that search time to find a job was significantly shorter when students attended a college that offered co-op education, irrespective whether students did a placement or not. The authors presumed that colleges with co-op education had a greater focus on employability than those without, which was generally beneficial for all students, irrespective of the program.

4. Discussion

Drawing on well-established career models (e.g. Arthur et al., 1995; Fugate et al., 2004; Hirschi, 2012; Lent et al., 1994) and research on identity construction among new comers (Pratt et al., 2006), we developed a theoretical framework to synthesize the evidence on the effectiveness of work placements and to examine changes in psychological constructs and career outcomes. This posits that the placement experience enhances career resources and employability through intertwined identity and social learning processes (e.g. Pratt et al., 2006) involving dynamic changes over time (Selenko et al., 2018). More specifically, our framework suggests that career resources are enhanced through three related identity and social learning processes that occur during a placement: (a) learning and identity change, (b) identity validation through social environments, and (c) experiences shaped by possible identity enactment.

Taking an abductive approach, we now summarize key findings and discuss to which degree the empirically uncovered changes in constructs and processes converge with or diverge from the theoretically derived mechanisms of our framework to focus on gaps in theory and research, and implications for a future research agenda.

4.1. Interpretation of results in the light of the theoretical model and gaps in the literature

Although the value of work placements for career success is seemingly taken for granted as a valuable ‘trial transition’, our review paints a more complex picture. Overall, placements seem to affect objective career outcomes positively: the evidence for placements leading to better graduate employment prospects is consistent – even if effects are small to medium and graduates do not necessarily earn higher wages. There is some (albeit mixed) evidence that participating in a placement is also beneficial for academic achievement.

Most studies assessed either changes in career resources or career outcomes but did not explicitly test theory - let alone processes suggested by our theoretical model. We found evidence for changes in psychological constructs linked to employability and career resources but these varied depending on which construct was investigated. For example, results indicated that *generalized* self-efficacy and self-esteem do not appear to change, but that *specific* work or study-related self-efficacy, competencies and skills do increase following a placement. Placement students are likely to change their attitudes towards their academic programs (studies point to both positive and negative) compared to non-placement students, yet might find it more difficult to decide between different careers (possibly being aware of more career options: Auburn et al., 1993).

As the meta-categories in Table 1 illustrated, the variables tested in the reviewed studies could be mapped to most career resource constructs or career outcomes.

Our theoretical framework suggests that learning can lead to identity transition during a placement; changes in self-efficacy, self-esteem, confidence, as well as knowledge skills and abilities can be seen as reflective of underlying social learning processes (Bandura, 1982). Our abductive critical review elicited evidence of such changes, specifically in work- or subjected related self-efficacy or competencies rather than general self-efficacy, pointing to possible mastery experiences in the work domain which might have been developed hand in hand with forming a new identity (e.g. someone who can do certain tasks well; a valued member of a team). We deem it likely that changes in knowledge, skills and attitudes as reported in the majority of the reviewed studies will have triggered identity changes as well.

Furthermore, changes in career attitudes, attitudes towards subject, work or placement and work values can be seen as being indicative of identity changes. These changes in attitudes might reflect a change in comparison standards, norms and values which

are acquired through social learning processes during the placement, suggesting a shift in the underlying social self-categorizations. Attitudes are generally informed by identity, but also tend to inform identity in turn (Ashforth & Schinoff, 2016; Lee, Park, & Koo, 2015; Olson & Zanna, 1993). Drawing from notions by Pratt et al. (2006) we argue that these social categorizations can then serve as sources of orientation for career-related attitudes and desired careers (Zhang, Liao, Yan, & Guo, 2014).

For example, studies showed that some of the attitude changes were negative following completion of a placement: being more critical or positive towards the academic program or feeling more undecided about future career choices (Auburn et al., 1993; Green & Farazmand, 2012). We argue that such attitudes might diverge as different benchmarks are applied, that are acquired through social learning processes in the placement which in turn may lead to favourable or unfavourable evaluations of one's degree program and career choices (also in the light of what one has learned so far). This does not necessarily indicate that a placement has not been 'successful' but might rather reflect a fundamental re-evaluation and re-orientation of one's own benchmarks, goals and abilities. Indeed such a change in attitudes towards the degree program as response to identity changes have been reported before in other domains (Pratt et al., 2006).

Our theoretical model further proposed that social encounters experienced during a placement can act as sources of new possible identities and opportunities for novel identity validation, yet social interactions and constructs measuring aspects of social capital were completely absent from the reviewed studies. None of the studies, examined changes in social capital (Hirschi, 2012; "Knowing whom": Arthur et al., 2005) or the influence of role-models (Gibson, 2004). This is a clear research gap.

Our theoretical framework suggested that experiences are shaped by possible identity enactment. Having experienced the work context and developed a new identity at work (e.g. as someone who can master specific tasks, as being part of a team or project), placement students might set themselves different career goals or objectives. The overall finding that placement students are more likely to experience higher levels of objective and subjective career success might be a reflection of an outcome of these processes. Also the finding that placement students engaged in different career activities after the placement might be indicative of that (e.g. Rathbun-Grubb, 2016). This analysis leads us to a summary of the future research agenda.

4.2. Future research directions

4.2.1. Theoretical considerations emerging form our review

When comparing our empirical findings with the theoretically derived suggested model, three specific suggestions for future research emerged. First of all, none of the studies explicitly investigated in a theory guided way the processes of how placements affect career resources and outcomes. Some studies drew on Social Learning Theory (Bandura, 1982), but none of the studies considered identity change processes (and the interplay between these two processes). Constructs included in the reviewed studies were often not selected with a clear theoretical rationale. There is convergence in several studies that placements enhance levels of confidence in work related skills and increase work/study-related self-efficacy, also an increase in knowledge, skills and abilities is widely reported. Furthermore, a substantial number of studies indicated that placement students reported significant attitude changes – regarding their academic studies, their placements or their career. We used our theoretical model to abductively explain these changes and proposed processes. We recommend that future research assesses those underlying mechanisms more explicitly, starting with a conscious, theory driven choice of constructs.

Second, it became evident that a number of theoretically plausible processes rooted in the careers literature were completely absent from existing studies on placement. For example, there is a complete oversight of the impact of social networks and social support on career outcomes in the placement literature. This is surprising given that these are key resources for employability (social resources; Hirschi, 2012; social capital; Fugate et al., 2004) and might be indicative of a lack of theoretical integration of the placement literature with the overall careers literature. Our framework and review of career theories in relation to placements can guide future researchers in selecting more meaningful constructs for empirical studies.

Third, we uncovered a number of contextual and situational conditions that seemed to influence the relationship between placements and career outcomes, pointing to boundary conditions such as institutional influences (Wessels & Pumphrey, 1996), autonomy (Arnold et al., 1995; Auburn et al.,1993) and supervisor influence (Basow & Byrne, 1992). Such boundary conditions can be understood in terms of Blumberg and Pringle's (1982) model of performance, which proposes that the opportunity to perform, affects also the willingness and capacity to perform. Moderators are likely to account for some of the inconsistencies: for example, some studies showed that attitude changes towards the academic program were negative (Auburn et al., 1993) following completion of a placement, while others showed that these were positive (Green & Farazmand, 2012).

Undoubtedly, the literature has neglected to adequately capture the placement experience itself. It is currently not possible to assess which aspects of the placement experience contribute to positive changes in psychological factors, career resources and career outcomes, and potentially act as moderators. Future investigations of moderators would benefit from a theoretically guided selection of moderator variables, which have not been systematically examined.

The role of the moderating influences needs to be investigated further. Regarding the three mechanisms of learning and identity interplay outlined in Fig. 1, there are multiple possibilities as to how aspects of the placement and attributes of the placement student can impact the interplay of social learning and identity construction. For example, a placement where students experience a large mismatch between their expectations and view of themselves and the demands of the job, will probably require different identity alignment processes and more learning processes, than placements where the mismatch is minor (see Pratt et al., 2006). Institutions that offer feedback, mentoring, and opportunities for positive validation in response to an individual's need, will probably enable a smooth identity transition and effective learning process. As placement students gain experience and are able to exert more discretion in their job, they may eventually show more job crafting behaviors and instances of modifying their goals in response to their new

identity (see also Pratt et al., 2006). According to literature on identity formation (e.g., Ashforth et al., 2008; Ashforth & Schinoff, 2016) individuals with a higher need for uncertainty reduction or self-knowledge, would be more motivated to reconstruct their self in a novel placement situation. Similarly, following the literature on social learning processes we might expect that those people who are equipped with better resilience and adaptability (which are core elements of career construction theory by Savickas, 2012) or with a stronger learning goal orientation would benefit from social learning processes more than others. All of this suggests that we need to consider aspects of the institution and the placement situation (considering different levels at which moderators operate) and personal characteristics simultaneously when trying to understand the effect of identity change and learning processes on eventual career outcomes.

4.2.2. Methodological considerations emerging from the studies in the review

4.2.2.1. Improving research design. Much of the literature we encountered had methodological shortcomings as it did not include control variables (e.g., prior work experience, placement entry criteria) or moderating factors (influence of degree program; employment area; type of organization). Few studies employed a longitudinal within and between-group comparison design and most studies did not follow up placement students into their careers to examine long-term effects of work placements (the longest time frame examined following graduation was around 7 years).

4.2.2.2. Collecting data from multiple sources and perspectives. Studies overly relied on self-report data (unless archival data and grades were used) and rarely included the perspective of the supervisor or academic staff supporting them during their placement. Evaluations of interns and mentors tend to diverge, with mentors evaluating interns higher as the placement progresses (Gilbert et al., 2014). The experience of supervisor support (and team support) during the placement is likely to be very important for the learning outcomes and perceived mastery experiences; potentially alleviating stress experiences and helping with the development of a work place related identity. Including more than just the placement student's view would certainly benefit future research.

4.2.2.3. Improving construct measurement and alignment. It appears that the more closely aligned the intended outcomes and their respective measurement, the clearer the effects. Broad and general constructs (e.g., generalized self-efficacy) can be influenced by a great number of other factors outside the placement, which makes their prediction less precise. Similarly, there is a natural limitation in the predictive validity of constructs with vague or unclear operationalizations (e.g., 'functioning in social institutions'; Gardner et al., 1992).

4.3. Practical implications

Most importantly we need more theoretically guided and methodologically rigorous studies to better understand the processes which lead to any effects of placements on career outcomes through increases in career resources. We recommend that universities/colleges offering placements implement theoretically informed, but also tailored evaluation programs. Contextual and situational factors are likely to contribute to the success of a work placements which are under-researched. Studies have emphasized the importance of autonomy and support (Arnold et al., 1995; Auburn et al., 1993; Feldman & Weitz, 1990), which are important for identity construction (Pratt et al., 2006) and are linked to higher levels of self-esteem and higher self-ratings of abilities following completion of a placement; placement implementation and evaluation should prioritize these aspects. Feldman, Folks, and Turnley (1998)[5] found that the characteristics of the internship job (e.g., autonomy, task identity, dealing with others) predicted job satisfaction in the internship, internal motivation, job involvement and positive expectations of working in their subject degree area.

Furthermore, the career support the academic institution provides more generally is beneficial – also for non-placement students (Wessels & Pumphrey, 1996). Basow and Byrne (1992) concluded that internship supervision is a vital component of a successful internship; we would add – based on an extensive literature on social learning and social identity processes - that offering supportive supervision during setbacks, showing ways to experience successful mastery experience, as well as having an eye on the emotional support during identity disruptive experiences would be issues which to pay attention.

4.4. Limitations

We note the overall challenge of synthesizing a body of literature which is diverse in terms of measures and study designs and not necessarily theoretically grounded. The abductive approach comes with certain shortcomings. Although we find plausible theoretical arguments as to why the results might indicate social learning and identity change processes, alternative explanations cannot be ruled out. Future theoretical development of placement processes would be of benefit, if these implicit processes could be made more explicit. None of the reviewed studies measured mediators. Well-designed studies that examine mediation models in the placement context (e.g., Liu, Ferris, Xu, Weitz, & Perrewé, 2014) do not focus on psychological changes of individuals undertaking a placement.

Despite our rigorous search and screening process it is possible that not all key evidence was captured as we limited inclusion to studies with a control group design and/or a longitudinal design to increase the validity of our conclusions. We also note that most of

[5] This study was not included in our review as despite having a longitudinal design, constructs were not compared before and after internship completion to assess changes in these constructs.

our studies were from English speaking countries: US (18), the UK (11), Canada (5), Australia (2) and Japan, China (both samples were in the same study), Korea, Malaysia and Switzerland (1 study each). Are work placement programs a particular feature of Anglo-Saxon Higher Education systems, or are studies from other countries not published in the English-speaking literature?

Lastly, the empirical part of our review is limited by the quality of primary studies informing it. We have already discussed notable shortcomings of the studies in terms of theoretical reasoning and methodological approaches. Based on the constructs and data included in the reviewed studies, the nature and number of categories extracted was limited by the data that we had at our perusal. A broader database (i.e. more studies) might have resulted in a greater number and more refined categories.

Given that all reviewed studies were interested in whether placements made a difference to career-related outcomes, the lack of contextual information about the placement experience itself was surprising. Linked to this, it is also notable across the studies that placements were exclusively discussed as a positive opportunity and/or experience, even where the observed effects were not unequivocal. Put differently, the assumption that placements simply 'must be good' manifests itself in empirical research too, neglecting potentially negative outcomes of placements that might be observed under certain conditions (e.g., lack of supervisor support and training, high workload).

5. Conclusion

By conducting a theory-guided systematic review of the quantitative evidence available on work placements our paper makes three key contributions to the literature. First, by synthesizing the evidence for how (and whether) placements affect subjective and objective career outcomes through intertwined social learning and identity perspectives, we brought some structure to a very heterogeneous field of research. Second our paper examined the mechanisms that we suggest explain how the placement experience affects career outcomes – an area that has been neglected in the reviewed literature. Our review revealed some clear gaps in the literature: the reviewed studies were overwhelmingly pragmatic rather than theory-driven in their approach, which was closely linked to the observations that methodological approaches were often not sufficiently developed. Third, in our paper we developed a theoretically informed framework that provides a lens for understanding existing findings and guiding future research. Hardly any of the reviewed studies examined the processes by which the placement experience affects career outcomes. Our framework extends these existing findings and career approaches more generally, by emphasizing the dynamic nature of career transitions, drawing on social cognitive and identity related perspectives, to help us understand how career resources are accumulated and employability is increased. Work placements embody unique career transition characteristics, yet they share important features with other situations where individuals are placed in novel surroundings, be that the situation of newcomers to organizations, or already established employees in new job surroundings, such as individuals on a job rotation, or individuals in voluntarily chosen, fixed-term work. A theory-driven, methodologically well-developed research agenda therefore could hold promise for contributions to careers and work performance literatures beyond the specific focus of work placements.

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Appendix A

Appendix Table
Details of the reviewed studies and extracted variable categories

Reference	Research Design	Form and duration of work placement, including full-time/part-time	Sample characteristics; including country data was collected in, discipline, institutional, organizational context; sample size	Variable categories extracted	Summary of results
Ahmad et al. (2014)	Cross-sectional comparing placement with non-placement group	No information provided	Malaysia; UG; Accounting; placement sample n = 329, non-placement sample n = 302	Career attitudes: career decidedness, professional commitment intention, unconditional commitment, non-commitment; self-efficacy (general)	Comparing accounting students who participated in a placement with those who did not, placement students had lower professional commitment intention towards accounting than non-placement students (i.e., "organizational reality shock" Dean et al., 1988). No significant group differences for other dependent variables (self-efficacy, intrinsic interest, extrinsic interest, subjective norms, anticipated conflict, unconditional commitment, non-commitment). Analyzing placement participation in conjunction with other

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Appendix Table (*continued*)

Reference	Research Design	Form and duration of work placement, including full-time/part-time	Sample characteristics; including country data was collected in, discipline, institutional, organizational context; sample size	Variable categories extracted	Summary of results
					predictors, it was not found to be a significant predictor for any of the commitment scales.
Arnold et al. (1995)	Longitudinal comparing two cohorts across three measurement times	Sandwich placement (one-year full-time as part of degree program)	UK; UG; Psychology Mean age 19 years; placement group n = 65, non-placement group n = 155	Career attitudes (here decidedness); self-efficacy, self-esteem, confidence knowledge, skills and competencies; work experience and job design	There were no effects of placements on self-esteem and career-decidedness (compared to a control group) but the quality of placements mattered: having more autonomy during a placement was linked to more self-esteem and self-rated abilities at time 3; overall there were small effects.
Auburn et al. (1993)	Longitudinal (four times of measurement) comparing placement and non-placement students	Sandwich placement (One-year full-time as part of degree program)	UK; UG; Psychology; mean age 22 years; T1: n = 187 (end of year 2), T2: placement student n = 85, non-placement student n = 78, T3 (after placement in final year/after graduation): placement student n = 58, non-placement student n = 44, T4 (7 months after graduation/over 1 year after graduation): placement student n = 61, non-placement student n = 53	Knowledge, skills and competencies (work experience, perceived importance of abilities to perform task); career attitudes (decidedness)	No benefits for academic study from participation in placements. Placement students who returned to the final year of their programme reported low levels of utilisation of placement experience in formal components of academic work. Placement work rated as more satisfying compared to academic study, and involved a greater degree of cooperation. Placement did not have a positive effect on career decidedness compared to prospect of graduation, although reduced some aspects of indecision. Placement students rated their work after graduation more favourably than non-placement students. For the transition into employment, there was an increase in career decidedness and self-rated work ability regardless of whether students had completed a placement.
Basow & Byrne (1993)	Longitudinal pre and post placement	No information available, other than 'placement' appears short term, of 14 days or less, or 15 days or more	Country likely to be US (not stated); UG; Journalism; N = 63	Self-efficacy, self-esteem, confidence; career attitudes; subjective career outcomes	Decreased attitudes for self-esteem, educational preparedness and career insight after completion of placements. Decrease in attitudes over placement duration stresses the need to set accurate expectations about what a placement can and cannot deliver; they might act as realistic job preview; placement supervision seems to be a vital component.
Bates et al. (2013)	Longitudinal pre and post placement	Elective work-integrated learning, one semester-long placement	Australia; UG; Criminology; mean age 23 years; N = 22	Self-efficacy, self-esteem, confidence: work-related self-efficacy	Following the placement students reported higher scores on the overall work self-efficacy scale and the following work self-efficacy subscales: problem-solving, work-related politics, work pressure, role-expectations. No significant differences were found for self-efficacy related to teamwork and work-related sensitivity.
Brooks & Youngson, (2016)	Cross-sectional, comparing placement with non-placement group	One-year placement as part of sandwich degree	UK; UG; various disciplines including Art and Design, Business studies, Mathematics, Engineering, Physical Sciences, Biological Sciences; placement sample n = 777, non-placement sample n = 698	Academic achievement; Objective career outcomes: employment outcome, salary	Placement students improved on their mean grades, non-placement students did not (difference statistically significant). Placement students 50% more likely to obtain graduate level job and more likely to be in full-time employment; salaries higher for placement students. Most comparisons were made without providing test statistics, therefore it is not always possible to establish how the authors drew their conclusions.

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Appendix Table (*continued*)

Reference	Research Design	Form and duration of work placement, including full-time/ part-time	Sample characteristics; including country data was collected in, discipline, institutional, organizational context; sample size	Variable categories extracted	Summary of results
Callanan & Benzing (2004)	Cross-sectional, comparing placement with non-placement group	Part time placement	US; final year UG; placement sample n = 88, non-placement sample n = 75	Objective and subjective career outcomes: employment outcome and perceived fit with job	Placement students were 4.43 times more likely to have secured a job than non-placement students (also when controlling for number of job interviews). Placement students were not more likely to have interviews, or have more confidence in fit with the job.
Craig & Oja (2013)	Longitudinal pre and post placement	One semester (14 weeks) full-time	US; UG recreation management; N = 33	Knowledge, skills and competencies: moral judgment and reasoning	After placement participation moral reasoning scores were significantly higher (specifically: decrease in personal interest schema, increase in post conventional schema).
Crawford & Wang (2015)	Longitudinal using archival records from four cohorts of students (comparing placement and non-placement students)	Full-time as part of sandwich degree	UK; UG; Business, Accounting and Finance; placement student sample n = 116, non-placement student sample n = 198	Academic achievement	Placement students performed significantly better than non-placement students in their final year, controlling for prior academic achievement; results were separately analyzed for UK, Chinese and other international students. Results for Chinese students were inconclusive (small numbers). Possible self-selection effect as placement students outperform non placement students academically prior to placement.
Feldman & Weitz (1990)	Longitudinal pre and post placement	10 - 12 week summer placement organized for field of study (for study credit)	US; UG; Business studies; N = 72	Attitudes towards work/ placement/ subject; generic work attitudes and values; career attitudes (commitment, career beliefs)	Placement students with realistic and positive job expectations had more positive placement attitudes and attitudes towards retailing ("anticipatory socialization"); intrinsic motivation also had a positive effect.
Gardner et al. (1992)	Longitudinal study, observing changes in salary over time	Placement as part of cooperative education, 10 weeks each	US; UG; Junior year of University; N = 1037	Objective career outcomes (salary); academic achievement	There was a significant effect of placement on starting salary, especially for those who signed up with their placement employer (but only 35% of placement students did). Authors suggest that there is an optimum number of placements - the more often student completes a placement with a certain organization, the more they are viewed as a regular employee and evaluated differently (which does not always result in positive effects on their starting salary).
Gilbert et al. (2014)	Longitudinal, following placement students in a year across three times of measurement	Placement, 10 hours per week	US; UG; Life or Health sciences; N = 44	Knowledge, skills and competencies: research skills and abilities	Placement students showed significant improvements in application of classroom knowledge, use of methodology, proficiency of practice; communication; it was notable that mentor ratings were consistently higher than their self-evaluations.
Green & Farazmand (2012)	Longitudinal for applied project perceptions and experiences	Placements for set number of hours (15); PT, completed during junior year or first semester senior year	US; UG; marketing; N = 55	Knowledge, skills and competencies (also personal development)	Students with placement experience had better (perceived) learning outcomes (applied learning skills and benefits for career goals) compared to students with no placement experience in the live-case project. Although mean grades of placement students were higher, this difference was not significant.
Green (2011)	Cross-sectional, comparing placement with non-placement group	One-year full-time	UK; UG; Business Studies; placement sample n = 60, non-placement sample n = 32	Academic achievement	Placement students had significantly higher final degree marks (but did not have higher tariff points on entry); for placement students improvements in average grades also translated into likelihood of a higher degree classification;

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Appendix Table (*continued*)

Reference	Research Design	Form and duration of work placement, including full-time/part-time	Sample characteristics; including country data was collected in, discipline, institutional, organizational context; sample size	Variable categories extracted	Summary of results
					regression analyses showed that performance in placement year added explanatory power in predicting final degree mark.
Hauck et al. (2000)	Longitudinal, comparing placement with non-placement control group over 2 points of measurement	Structured Placement; 12 weeks	US; UG; Construction Management; placement n = 60, non-placement n = 89	Knowledge, skills and competencies; academic achievement, subject specific knowledge	No statistically significant difference in overall GPA for placement students (pre and post placement, changes in GPA).
Hayward & Horvath (2000)	Cross-sectional, comparing placement with non-placement group	Placement conducted as part of co-operative education, 3-4 full-time placements as part of study for about four months each	Canada; UG; mainly Computer Science; placement sample n = 39, non-placement sample n = 40	Career attitudes (beliefs); academic achievement	Placement students had higher career beliefs than students who did not participate in work placements (specifically job experimentation, improving self, learning jobs skills - independently of duration of program experience). In addition, there was a general interaction effect, showing that the effect of placement participation on career beliefs was moderated (augmented) by experience (early vs late on the program). This was observed for career beliefs of working hard and taking risks (with the students on placement and more experienced students scoring higher than students less experienced and not on placements).
Iqbal (2007)	Longitudinal study comparing performance records of students before and after placement, and of placement and non-placement students.	Cooperative Education; 16 months, full-time; alternating between work and study terms	Canada; UG; Pharmacology; Placement n = 56, non-placement n = 43.	Academic achievement	Placement students improved their grades, while non-placement students did slightly worse (opposite to the expectation that placement students would do worse having been out of education). These (within-group) differences were not statistically significant.
Kilgo et al. (2015)	Two-wave large scale survey across 4 years years including placement and non-placement students	Completion of a placement (yes/no). No further details provided	US; UG; Liberal Arts college students, approximate 69.8% of 2212 participants (exact number not stated)	Knowledge, skills and competencies (leadership, moral); academic achievement	There were varied results, as placement participation had positive effects on need for cognition, intercultural effectiveness and socially responsible leadership, no effect on critical thinking, moral reasoning, positive attitude towards literacy and other aspects of intercultural effectiveness.
Lucas et al. (2009)	Cross-sectional, comparing placement, work experience and no-work experience students	Sandwich placement, summer placement, part time work, work in parental business (comparison)	UK; UG; Engineering; Total N = 400 of whom 256 had work experience in the past year	Self-efficacy (subject specific), self-esteem, confidence	Both, sandwich and summer placements were not significantly associated with venturing and technology self-efficacy. Further results show that job characteristics of the placement (e.g. job rotation, difficulty of work) were linked to subject specific self-efficacy. Overall, results show that work experience per se is not linked to higher self-efficacy as contingent on the features of the placement.
Mansfield (2011)	Cross-sectional using archival data comparing placement with non-placement group	Sandwich degree with placement year	UK; UG, Property related degree program; placement sample n = 336, non-placement n = 81	Academic achievement	Participation in placements was linked to higher academic achievement in year 3, controlling for marks in year 2. The study points to extreme variability in academic performance in year 3, suggesting that not every student improves performance as a result of a placement.
McCormick (2013)	Cross-sectional comparing placement and non-placement group	Placement (referred to as internship and co-operative education experience)	US; UG; range of programs including Engineering and Architecture; placement sample n = 194,	Self-efficacy (subject specific), self-esteem, confidence; attitudes towards	Placement experience appeared related to higher self-efficacy (specific to sustainable engineering) and lower negative affect toward sustainable engineering. Unique effect of placement

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Appendix Table (*continued*)

Reference	Research Design	Form and duration of work placement, including full-time/ part-time	Sample characteristics; including country data was collected in, discipline, institutional, organizational context; sample size	Variable categories extracted	Summary of results
			non-placement n = 321	work/ placement/ subject	experience (among other independent variables) on outcome variables not tested.
Moores & Reddy (2012)	Cross-sectional study, comparing career outcomes of graduates who were on a placement with those who were not; uses archival data of large scale national survey plus primary survey.	One year placement, full-time	UK; UG; Psychology and other subjects; approximately 70% of 188 students were on placement (exact number not stated)	Objective and subjective career outcomes: Employment outcome, type of employment, salary, career success, career satisfaction, career schedule, fit, change in career goals	Varied results; non-psychology placement students had more work activity following graduation, and more appropriate jobs, placement students earned more. For psychology students, also a significant association between placement undertaken and graduate job level was found; placement students were more satisfied with their career and their perceived career schedule.
Murphy et al. (1999)	Cross-sectional survey study, comparing placement and non-placement students	Cooperative Education, full-time during work experience components	Canada; UG; Business administration and Tourism/ hospitality management; Placement n = 120, Non-placement n = 125	Knowledge, skills and competencies (cognitive style); academic achievement	Placement students were significantly more analytical in their cognitive style than non-placement students. The number of completed work-terms during the coop program and gender did not make a difference for cognitive styles.
Nunley et al. (2015)	Experimental study using randomly-generated resumes	Completion of a three months industry relevant internship	US; various degree subjects including business and non-business degrees; n = 2335 of 9396 profiles with internship experiences.	Objective career outcomes: invitation to job interview for business related jobs.	Generated applicant profiles that included placement experience were more likely to result in an invitation to interview for business-related jobs. The effect is greater for non-business majors and applicants with high academic ability.
Park (2015)	Analysis of student profiles, comparing placement and non-placement students	Completion of an internship (yes/no) No further details provided.	Korea; UG; Engineering; N = 4176 (placement and non-placement students; % or exact number of placement students not stated)	Objective career outcomes: type and quality of employment	Having had placement experience increased the likelihood of total employment, of employment in one of the top 500 companies and of employment in companies offering high wages and job stability (as defined by the authors)
Rathbun-Grubb (2016)	Analysis of large scale alumni survey data comparing graduates who were on placement with those who were not	Completion of an internship (yes/no). No further details provided.	US, Canada; PG, (Masters); Library and Information Systems; n = 2581 of 3226 students on placement	Objective career outcomes: Length of time to secure employment after graduation, management or leadership, professional activities	Placement completers were significantly more likely to secure employment within three months of graduation or first application, be a member of a professional association, mentor students, actively participate in an online professional discussion group, win a grant, collaborate with other professionals, and attend, organize, and present at conferences. They also had higher than average rates of participation in professional and leadership activities.
Rowe (1992)	Cross-sectional cohort study (two cohorts), comparing placement and non-placement students	Participation in an (optional) cooperative education program, typically including 5-6 work terms	Canada; UG (Honours); Humanities or Social Sciences; n = 92 placement students, n = 125 non-placement students	Objective and subjective career outcomes; attitudes towards work/ placement/ subject: Job satisfaction, salary, job involvement, organizational commitment, attitudes towards aspects of the work	Non-placement students were significantly more likely to pursue further education, had significantly higher salaries, and had better attitudes towards the program (they were more likely to think it satisfied learner needs). There were no differences regarding satisfaction with pay, job satisfaction, organizational commitment, and work involvement.
Santer (2010)	Cross-sectional study using archival data across several cohorts, comparing placement and non-placement students	Full-time, sandwich program), 9-12 months in duration, professional training year in a research setting in an	UK; UG; Neuroscience; 30.4% of N = 217 students on placement (exact number not stated)	Academic achievement	Placement students had significantly higher final degree marks, were more likely to have first class degrees, had significantly higher core module marks and were more likely to progress to a PhD after their studies.

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Appendix Table (*continued*)

Reference	Research Design	Form and duration of work placement, including full-time/part-time	Sample characteristics; including country data was collected in, discipline, institutional, organizational context; sample size	Variable categories extracted	Summary of results
		industrial, academic or clinical laboratory.			
Scholz et al. (2004)	Longitudinal survey study, pre and post placement, multi-source data (students and their supervisors)	Professional Placement for 15 weeks, no further details stated	Switzerland, Environmental Natural Sciences students in their 7th semester (not stated whether UG or PG); N = 478 students on placement	Self-efficacy, self-esteem, confidence, change in perceived educational qualification	Students rated the value of their qualification they would gain through their studies especially with regard to general abilities and key qualifications lower after their placement. But nevertheless they reported that the placement would enhance these qualifications and judged that it did.
Siedenberg (1990)	Survey study, comparing graduates who were on a placement with those who weren't.	Participation in an (optional) Cooperative Education program at least once (or not). No further details provided	US; Public & Liberal Arts; ; n = 105 placement students, n = 276 non-placement students (not stated whether UG or PG)	Objective career outcomes: salary, classification of initial job	There were no differences between graduate wage rates of coop (placement) and non-coop students. There were significant differences on college wage rates (favoring non placement students). Significant (but very small) differences on wage gain after graduation (favoring placement students slightly).
Simons et al. (2012)	Longitudinal survey study, pre and post placement year; multi-source data (students, their field supervisors and their faculty advisors); multimethod study (quantitative and qualitative methods)	Placement (100 or 200 hours of field-work) followed by placement (300 or 400 hours of field-work), in various types of community mental health centers, agencies or intervention/training programs	US; UG; Psychology, mean age 22; N = 38 placement students.	Personal, interpersonal and civic knowledge, skills and competencies; civic attitudes, leadership skills, attitudes towards ethnic groups and racism; career development	Quantitative results showed that students who were on a shorter placement had more improvement of their multicultural skills than students on a longer placement. Multi source interview data indicated that the program contributed to the personal, civic and professional development of students.
Smith-Eggeman & Scott (1994)	Cross-sectional comparing placement with non-placement group	Placement (Cooperative Education)	US; UG; age range 18-24; placement sample n = 124, non-placement n = 284	Knowledge, skills and competencies: tolerance of others and relationship skills	Placement and non-placement students differed significantly in their tolerance skills but did not differ significantly on their reported quality of relationships.
Tanaka & Carlson (2012)	Archival study in two different university samples; comparing students on placement vs students who did not do placements (university 1); students on different number of placements (university 2).	Work-integrated learning; average number of placements (in university 2): 2.1 (full-time; 80 working hours per placement)	Japan, Hong Kong; UG; n = 325 of 2572, n = 367 of 2588, n = 298 of 2487 students on placement (university 1), N = 1373 placement students (university 2)	Academic achievement (GPA)	For the Japanese cohort, there was an effect of completing work-integrated learning on final year GPA for two out of three cohorts. For the Hong Kong Chinese students the learning outcomes of a placement predicted final year GPA, but there was no effect of the number of placements and overall learning context during a placement.
Taylor & Hooley (2014)	Archival study utilizing data from large scale national survey, comparing employment outcomes of (1) students who did a preparation course and a placement, (2) students who did a preparation course but no placement, (3) students without course and placement; also includes primary survey data of preparation course participants	One-year full-time placement year (sandwich degree)	UK; UG; various business degrees, national survey: $N_{1/2/3}$ = 73/110/460; primary survey: N = 107 participants in the preparation course	Objective career outcomes: employment outcomes 6 months after graduation	Students who took a preparation course and a placement were more likely to find employment than those who did only a preparation course, who were more likely employed than students without course and placement. Similar but more pronounced differences were found between the three groups for the type of employment (graduate level or not).
Van Gyn et al. (1997)	Longitudinal survey study, comparing pre	Cooperative Education, no details	Canada; UG; Arts, Engineering, Science;	Knowledge, skills and competencies:	Placement and non-placement students were matched on their pre-placement

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Appendix Table (*continued*)

Reference	Research Design	Form and duration of work placement, including full-time/part-time	Sample characteristics; including country data was collected in, discipline, institutional, organizational context; sample size	Variable categories extracted	Summary of results
	and post-test scores of cooperative education students and non-cooperative education students	on number or duration of placements provided	matched pairs of n = 117 placement and n = 117 non-placement students	subject specific knowledge	data (score on pre-test, academic discipline, gender, year of study at initial testing, work experience prior to the initial testing, time spent in university between initial test and second test period). Students who completed a placement exhibited better problem solving skills and functioning in social institutions than students who did not complete a placement.
Walo (2001)	Longitudinal survey study; comparing students pre and post placement	Placement: minimum of 600 hours over 24 weeks in tourism and hospitality sector	Australia; UG; Business in Tourism degree, 19-23 years; N = 32 (across two waves)	Knowledge, skills and competencies: leadership	Students who completed a placement scored higher in six of 24 managerial competencies (as defined in the study) post placement than pre placement: organizing, controlling, reducing information overload, presenting information: writing effectively, managing change and presenting ideas. Students also improved in three out of eight managerial roles: coordinator, monitor, and broker roles.
Wessels & Pumphrey (1995)	Cross-sectional survey study; comparing graduates who were on a placement with graduates who were not	Participating in a co-operative education or not (no further information provided)	US; graduates of community colleges (not stated whether UG or PG); Associate in Applied Sciences degrees; overall N = 1575, (exact numbers of placement vs non placement students not stated)	Objective career outcomes: employment outcomes, commitment, job advancement	Coop (placement) students were more likely to find an appropriate job where they could use their skills, and were also likely to get their first job with their coop employer. Being at a college offering a coop (placement) program (regardless of whether actually being registered for a coop program) reduced the time spent finding a job (potentially because these colleges have a larger network of prospective employers).
Wessels & Pumphrey (1996)	Cross-sectional survey study; comparing graduates who were on a placement with graduates who were not	Participating in a co-operative education or not (no further information provided)	US; graduates of community colleges (not stated whether UG or PG); Associate in Applied Sciences degrees; overall N = 1575, (exact numbers of placement vs non placement students not stated)	Objective career outcomes: salary	Hourly wage 5 years after graduation depended on other factors than coop status. Taking gender and labor force experience into account altered the results: females with less labor force experience benefited from taking a co-op program. Results indicate a small institutional effect: graduates from colleges offering co-ops appeared to earn higher wages (regardless of taking the co-op program or not).
Williams et al. (1993)	Cross-sectional survey study; comparing placement students (on three different placement sites) with non-placement students	Cooperative Education, students were on average between 3.9 to 5.5 months on placement, full-time, worked between 38.9 and 42.3 hours per week	US; engineering, average age 21.5- 23 between groups; Placement n = 68, Non-Placement n = 46; electrical engineering and computer science majors; 3.5 years in college (not stated whether UG or PG)	Knowledge, skills and competencies: tacit knowledge	There were no significant differences between placement students and non-placement students; except for tacit knowledge action (related to knowledge of business environments, challenge orientation and personal effectiveness in context). Non placement students were more motivated. There were differences between the three placement sites, which indicates that the nature of the placement matters. The placements in this study differed on pay, hours worked, frequency and helpfulness of feedback, as well as how many students a manager had to supervise.

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Appendix Table (*continued*)

Reference	Research Design	Form and duration of work placement, including full-time/part-time	Sample characteristics; including country data was collected in, discipline, institutional, organizational context; sample size	Variable categories extracted	Summary of results
Yung et al. (2015)	Cross-sectional archival study, comparing placement with non-placement group	One-year full-time placement during sandwich degree	UK; UG; Quantity Surveying and Construction Management; placement student n = 64; non-placement student n = 153	Academic achievement	Placement students had significantly higher GPA results in year 3 (Level 3, the final year) compared to non-placement, after taking into consideration of their year 2 marks (Level 2, before placement).

Note: As stated in the Results section under 3.1. "The placement context and experience", a number of different terms were used in the reviewed studies to refer to a placement. For consistency we use the term "placement" in the appendix table.
UG = Undergraduate, PG = Postgraduate

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