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Psychosocial work characteristics of personal care and service occupations: A process for developing meaningful measures for a multiethnic workforce

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Background and Objectives. Despite their rapid increase in number, workers in personal care and service occupations are underrepresented in research on psychosocial work characteristics and occupational health. Some of the research challenges stem from the high proportion of immigrants in these occupations. Language barriers, low literacy, and cultural differences as well as their nontraditional work setting (i.e., providing service for one person in his/her home) make generic questionnaire measures inadequate for capturing salient aspects of personal care and service work. This study presents strategies for (1) identifying psychosocial work characteristics of home care workers that may affect their occupational safety and health and (2) creating survey measures that overcome barriers posed by language, low literacy, and cultural differences.

Design and Results. We pursued these aims in four phases: (*Phase 1*) Six focus groups to identify the psychosocial work characteristics affecting the home care workers' occupational safety and health; (*Phase 2*) Selection of questionnaire items (i.e., questions or statements to assess the target construct) and first round of cognitive interviews ($n = 30$) to refine the items in an iterative process; (*Phase 3*) Item revision and second round of cognitive interviews ($n = 11$); (*Phase 4*) Quantitative pilot test to ensure the scales' reliability and validity across three language groups (English, Spanish, and Cantonese; total $n = 404$). Analysis of the data from each phase informed the nature of subsequent phases. This iterative process ensured that survey measures not only met the reliability and validity criteria across groups, but were also meaningful to home care workers.

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Conclusion. This complex process is necessary when conducting research with non-traditional and multi-lingual worker populations.

Keywords: caregivers, home care workers, measurement development, multiethnic workers, psychosocial work characteristics, qualitative analysis

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Introduction

Service occupations account for nearly one in five jobs in the United States (Bureau of Labor Statistics 2013). Within the service sector, personal and home care aides (hereafter called home care workers) are one of the fastest growing occupations (Henderson 2012), projected to employ 1.5 million workers by 2020 (Lockard and Wolf 2012). Similar developments apply to European countries (Tarricone and Tsouros 2008). Home care workers provide a variety of supportive services and companionship to the elderly and disabled, thus allowing them to remain in their homes and maintain a high quality of life. Services include housekeeping, cooking, assistance with personal care and grooming, and providing transportation to medical appointments.

While research has focused on the availability and quality of home care services and the well-being of those who receive services (e.g. Ellenbecker et al. 2008; Rosati 2009), few studies have investigated the working conditions and well-being of home care workers. Women, racial and ethnic minorities, and immigrants, are all disproportionately represented in the home care workforce. These jobs, which pay low wages and provide substandard benefits, result in almost one out of four home care workers living below the poverty line and one in three lacking health insurance coverage (Smith and Baughman 2007). Especially, little is known about the psychosocial work characteristics (e.g., job demands, job control, social support) of home care work. Such characteristics have been known to impact worker health and well-being (de Lange et al. 2003; Kahn and Byosiere 1992). Understanding the contributions of psychosocial work characteristics to the health and well-being of home care workers could illustrate some of the

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pathways through which exposures at the workplace contribute to the well-documented existence of socioeconomic inequalities in health outcomes (Clougherty et al. 2010). This is also an important gap in the literature because a caregiver's well-being has a direct influence on care recipients' well-being (West and Borrill 2006).

This scarcity of research investigating the psychosocial work characteristics of home care workers reflects challenges arising from both the demographic composition of the workforce and the organization and nature of the work itself. About 16% of the US workforce is born abroad; however, an estimated 24% of home care workers are immigrants (Bureau of Labor Statistics 2010). Existing theories on psychosocial work characteristics and measures based on these theories have been developed and tested with North American and Western European workers in their own countries (Hoppe 2011; Kortum et al. 2008). Even though these measures have been translated into various languages, their psychometric properties have rarely been examined among immigrant and minority workers (Fujishiro et al. 2011). Furthermore, because the vast majority of studies are conducted in a monolingual, mono-cultural setting (e.g., US-born workers, Japanese workers in Japan, immigrants from Mexico to the US), the literature offers little insight into potential non-equivalence across language/cultural subgroups within a multi-cultural, multi-lingual worker population. Given the high racial/ethnic diversity in home care workers, we do not yet know if existing measures collect reliable and valid data from home care workers.

Another challenge is posed by the structure of the work. Home care work is highly decentralized, occurring in clients' homes and throughout the community. There is little direct supervision or interaction with coworkers. Work hours and tasks are negotiated and assigned on an individual client basis, and can change frequently. In addition, the nature of the caregiver-

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client relationship can pose some unique emotional demands on the home care worker (e.g., accusations or anger expressed by the client) (Delp et al. 2010). Thus, questionnaire measures often used to assess psychosocial work characteristics may not adequately capture the relevant and important aspects of home care work.

Applying multiple methodologies for the questionnaire development process

These characteristics of home care and home care workers call for a comprehensive approach, one that employs both qualitative and quantitative methodology, in order to develop meaningful and useful measures of psychosocial work characteristics. Qualitative inquiry will uncover how home care workers experience the job, which will illuminate how much the traditional job stress framework is applicable to home care work, and help refine questionnaire measures. Quantitative inquiry will examine whether questionnaire measures can be used equivalently across language groups, and will determine the usefulness of the measures in a large-scale quantitative data collection. This paper presents a multi-methods approach for (1) identifying psychosocial work characteristics that are meaningful to home care workers and (2) creating survey measures of these work characteristics that are equivalent across multi-lingual, multi-cultural groups of home care workers.

A variety of questionnaire measures have been developed to assess psychosocial work characteristics (e.g. de Jonge et al. 2000; Karasek et al. 1998; Morgeson and Humphrey 2006). One of the most well-known and widely used measures that has been validated across occupations is Karasek's (1998) Job Content Questionnaire (JCQ). The advantage of using the JCQ as a starting point for developing a meaningful measure for home care workers is its theoretical framework, which has been applied in various settings over the last several decades. However, the questionnaire items (i.e., questions and statements designed to assess the target

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construct) were initially developed in the US during the 1970s, a time when most workers were employed in the manufacturing industry and in more traditional forms of work (e.g., long-term employment, set hours, highly structured and defined tasks), and may not apply to the non-traditional work setting of home care workers. We, therefore, took several qualitative and quantitative steps to adapt and refine existing measures to ensure that the constructs are meaningful to home care workers.

Methods and Results

Background, study population, and sample recruitment

This study reports the process of developing survey measures, which was part of the evaluation of an occupational safety and health intervention study for home care workers in Alameda County, California. Of the 19,000 home care workers in Alameda County, one out of three (35%) is an immigrant, mainly from Mexico, China, or other Asian countries. These workers provide home care within California's consumer-directed model, in which the clients hire, train, and supervise their home care workers. In this system, family members can be hired as home care workers. The workers have an assigned amount of time for each task (e.g., housekeeping, cooking, running errands) and are paid at an hourly rate (\$11.50 per hour as of 2009) by public funds provided through the State-administered In-Home Supportive Services (IHSS) program (Benjamin and Matthias 2004a). This employment structure creates two employers for a home care worker: the client who hires her and IHSS who pays her.

The development of the survey measures proceeded in three qualitative phases and one quantitative phase (see Figure 1), with each phase developed on the basis of knowledge gained in the previous phase. All phases were conducted in three languages (English, Spanish, and

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Chinese). We started with focus groups in order to explore salient dimensions of work for home care workers (Phase 1). Based on Phase 1 findings, we then selected validated scales from the JCQ that measure some of the relevant psychosocial work characteristics, translated these measures into the three languages, and conducted a first round of cognitive interviews to refine the items (Phase 2). We further revised the measures and tested them in a second round of cognitive interviews (Phase 3). Finally, we quantitatively tested the refined scales to ensure that they can be used in surveys (Phase 4).

[INSERT FIGURE 1 ABOUT HERE]

At each of the four phases of this study, we recruited participants from the group of home care workers in Alameda County, California. The overall recruitment strategy was similar across the four phases. The home care workers were recruited through our community partners, i.e., the Service Employees International Union (SEIU) and IHSS. All of them were employed by the IHSS with similar working conditions, work arrangements, and hourly wages. The participants were informed about the scope of the project and reassured about the anonymity of data and voluntariness of participation. Each respondent provided informed consent. In all phases they received grocery gift card for their participation. The amount of the gift cards varied based on the time commitment for the task with interviews compensated at \$20 per interview and the focus groups at \$40. Participants who contributed data in one phase were not invited to the later phases. Thus each participant provided data only once across the four phases. The study protocols were approved by Stanford University's and NIOSH's Institutional Review Board. The sample for each of the four phases and the specifics of the recruitment strategies are described in the following sections. We now present the procedures and findings for each of the four phases separately, and will integrate the findings in an overall discussion.

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Phase 1: focus groups

We began the process of measurement development by conducting focus groups to better understand home care workers' perceptions and evaluations of their work characteristics.

Separate focus groups were held for English, Spanish and Chinese speaking homecare workers in order to facilitate the discussion in their native language. To recruit home care workers, the SEIU stewards called members and asked them to sign up for focus groups during their community meetings. As a result, 53 home care workers participated in six focus groups (two in English, two in Spanish, and two in Chinese) in the union hall or other community meeting spaces. Each focus group was composed of between five and fourteen home care workers. Altogether, 29% of the participants were Spanish-speaking, 27% were English-speaking, and 45% were Cantonese-speaking. Across all focus groups 85% were women, consistent with other studies showing that 82% of IHSS homecare workers are female (Benjamin and Matthias 2004b).

Method. To encourage home care workers to reflect upon their work, we used picture-based activities which have proved to be appropriate for workers with low levels of education (Gong et al. 2009). Two activities addressed the research questions: 1) "How do workers view their relationships with their client?" and 2) "What are workers' perceived barriers in making safety and health improvements?" The first activity – the *associative imagery activity* – was conducted as an icebreaker to elicit home care workers' general attitudes toward their work and relationships with their client. The associative imagery activity used a metaphorical technique to allow respondents to associate photos with their own emotions. Participants were shown vividly colorful photographs (e.g., a sunny field of daisies, a basket full of oranges) and asked to choose the one that best represents their relationship with their client and explain why. The second

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activity – the *thought bubbles* activity – was aimed at gathering more specific information on the workers' ability to successfully raise and resolve concerns about health and safety at work and on their perceived barriers to making safety changes. Focus group participants were shown a flip chart with two stick figures with bubbles above their heads and given a scenario. For example, a worker is approaching the client because he or she has back pain from scrubbing the floor and wants to request a mop or some other equipment. They were asked to answer the questions: “What are the worker and the client thinking?” and “What might the worker/client be worried about?” (i.e., “What might be the thoughts in the bubbles above the heads?”).

The focus groups were audio-recorded and transcribed verbatim in the original languages. We used NVivo 9.0 to analyze the data for both the associative imagery, as well as the thought bubbles activities. Data analyses were guided by grounded theory principles (Strauss and Corbin 1998). Two bilingual researchers, one with Spanish and English, the other with Chinese and English, read through the transcripts in the original language to identify major themes. They discussed these themes, compared and refined them, and identified subthemes. If some themes were found in one language but not in the other, they were kept in the list. All themes were used as they coded the transcripts sentence by sentence. The coded segments were compared between the two bilingual researchers to find commonalities and differences. They then translated the codes and key responses into English. Additional two bilingual researchers (Spanish-English, Chinese-English) reviewed the codes and key responses to further refine major themes and subthemes.

Results. Across all language groups, the most commonly appeared theme was about barriers and facilitators to protecting workers' safety and health. This included three major subthemes: 1) workload and time pressures, 2) workers autonomy to control the way they do

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their work, and 3) support from the clients, including both emotional support and providing material support (e.g., tools, equipment).

Workload. In all focus groups, home care workers discussed how their work required them to accomplish too many tasks in too little time (English HCW: “I didn’t have enough hours to do what I needed to do for her, so I had to hustle.”). During the discussion workers offered specific examples for why their workload was so high. For example, some clients often assigned additional tasks that were not authorized by the IHSS, and the workers regularly worked longer than the assigned hours without receiving any financial compensation (Chinese HCW: “...your clients ask you, without ever stopping, to do things that are not in the contract, such as cleaning outside, and caring for pets.”). A common issue raised by workers who care for family members was that they often worked around the clock (English HCW: “There is no time off when caring for family members.”).

Job control. Several unique features of home care work strongly influenced workers’ perceptions of their job control. Because a home care worker’s workplace is also the client’s home, the worker and client need to negotiate and share control over that environment. In many cases workers felt that they could discuss problems with their clients to make positive changes by either purchasing new equipment or changing how or when work tasks are done. Sometimes the client initiated these discussions (Chinese HCW: “My client said, ‘Don’t bend to work. You’re not young. I’ll buy you a mop.’”). However, more commonly the workers initiated the discussion (English HCW: “I wouldn’t be scared to go tell them. I mean that it is my health.” English HCW response: “If you’re not healthy you can’t take care of them”). In some cases the workers seemed willing to accept the lack of control in their job as inherent to their role as a caregiver, especially for elderly clients (English HCW: “I think they are pretty much set in their

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ways...and if you deviate from it just a little, it throws them way off base.”). Among the Chinese workers, many associated this lack of control with showing respect for their clients (Chinese HCW: “When we are serving the clients, we should put their interest as priorities. We should cooperate with them to get what they need, and we should not upset them when they say no.”). Obeying the client’s instructions was, therefore, not considered as a lack of control but as part of their cultural norms.

Social support. Home care workers experienced receiving care, concern, and appreciation from their client as a strong job resource (Chinese HCW: “I was treated like a family member in my client’s home.” English HCW: “We get along well because we care for each other.”). They primarily reported emotional support (House 1981). In many cases, the physical and/or mental condition of the clients did not allow them to provide instrumental and informational support to their home care workers (English HCW: “The elderly lady that I’m taking care of, because of her age, she has no clue of what to do for me, because she has no resources to help me with my back or anything like that.”). The home care workers did not talk about social support from coworkers or the IHSS, but primarily focused on the home care worker-client dyad.

The focus groups revealed that, while the widely studied work characteristics of workload, job control, and social support are salient to home care workers, specific details for these characteristics are unique to the occupation. For example, the concept of fixed work hours does not apply and duties are not clearly defined but need to be negotiated with the client. Second, rather than having individual control over their tasks, home care workers and their clients negotiate and share control over their environment. Finally, home care workers do not mention coworkers as a source of social support. They focus primarily on emotional support from their client, who is their employer and care recipient at the same time.

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Phase 2: first round of cognitive interviewing

The focus group findings from Phase 1 informed us that workload, job control, and social support were salient aspects of work for home care workers. Based on the findings, we selected scales for these constructs from the well-validated JCQ (Karasek, et al. 1998). The aim of Phase 2 was to explore whether the items triggered similar responses across language groups. We applied cognitive interviewing as a technique to evaluate cross-language equivalence and response errors in survey questionnaires.

Method. Before conducting cognitive interviews to test whether the items were understood and interpreted similarly among a sample of racially/ethnic diverse home care workers, we first translated the English items into the equivalent in Spanish and Chinese. Two bilingual teams (one English-Spanish, the other English-Chinese) translated the original English scales into Spanish and Chinese. After initial translation and back translation in each language, the translators of both teams discussed problems identified during the translation process and assessed equivalence across the three language versions. Problems in the translation process that could not be resolved were incorporated into cognitive interview protocols. For example, the English-Spanish translators could not agree on a Spanish translation for the original job control item “I have a lot of say about what happens on my job”. Therefore various translations were presented to the homecare workers in the cognitive interviews to find out which one provoked similar responses as the English item (see also Fujishiro et al. 2010).

We developed cognitive interview protocols in English, Spanish, and Chinese to test the wording and content of the translated JCQ scales for workload, job control, and social support. We used the concurrent probing technique in which the interviewer asks for specific information relevant to a question after the participants have answered each question (Willis 2007). Before

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conducting the cognitive interviews, bilingual interviewers (i.e., Spanish/English, Chinese/English) received training from the authors. During the training we explained the purpose of the interviews, discussed the psychological constructs along with the intention of each item, conducted practice interviews with the interviewers, and practiced effective probing, encouragement, and troubleshooting. The items were continuously refined in an iterative process.

Results. The original items of the JCQ scales appear in Table 1. The first few cognitive interviews revealed that the participants had difficulties responding to items that were worded as statements. Therefore, the items were changed into question format (see column “Item revision in Phase 2”). Although previously validated for a variety of worker populations, the original JCQ items did not function as assumed.

[INSERT TABLE 1 ABOUT HERE]

Workload. The two original JCQ items were intended to capture the respondents’ perceived job demands. The item “have enough time” elicited different responses across participants. Several Spanish-speaking home care workers mentioned that they had enough time to get the job done. At the same time they explained that they had to work longer than the regular hours to finish all tasks and could not take breaks. We therefore replaced it across all language groups with the item: “How often can you finish your tasks?” To capture whether the respondents worked extra hours, we added a second item “How often do you work overtime?” after the first round of cognitive interviews.

Job control. As for job control, the results supported findings from the focus groups. Home care workers’ sense of control was deeply intertwined with what the client desired as well as with how the worker negotiated with the client to share control. Therefore, asking about workers’ individual sense of control did not capture job control in this unique work setting. The

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cognitive interviews revealed that respondents felt satisfaction from working the way their client preferred because this made their client comfortable. For example, in response to the question, “How much freedom do you have to decide how to do your own work?”, one English-speaking worker responded, “None. I have to do things to her standards. She's very wise. So, it's best if I do what she says.”

Social support. Finally, social support from coworkers was mostly irrelevant for home care workers (“How much can other home care workers be relied on...?”). The second social support item (“How much is your client helpful in getting the job done?”) addressed only instrumental support. Yet, in the interviews, respondents described emotional and appraisal support from the client as the most prevalent resource in their job. The cognitive interviews supported findings from the focus groups and revealed that the JCQ items did not function for this worker population.

Phase 3: second round of cognitive interviewing

Building on the findings of the focus groups (Phase 1) and the first round of cognitive interviews (Phase 2), we substantially revised existing items and added new items to the scales from previously validated measures (see Table 1, column “Item revision in Phase 3”). These had to be tested again for similar responses across language groups.

Method. The cognitive interviews in Phase 3 were conducted using the think-aloud technique, whereby the interviewer explicitly instructs participants to think aloud as they answer the survey questions (Willis 2007). This process gives insight into whether the respondent understands the items as intended by the researcher and whether it triggers consistent responses among different respondents. Several specific probes were included to address particular words

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or questions of concern. The training of interviewers followed the same procedure as for the first round of cognitive interviews.

We interviewed 11 home care workers in Phase 3 (seven in English, two in Spanish, and two in Chinese). All participants were women. As in Phase 2, the interviews lasted up to one hour and were conducted in cafés or the participants' homes. The interviews were audio-recorded with the participants' permission, translated into English, and transcribed by the interviewers.

Results.

Workload. In the second round of cognitive interviews some respondents reported that they finished all tasks in order to meet their client's needs. Yet, these tasks could not be completed within the hours that had been authorized by the IHSS. Our focus group results had also shown that the traditional concept of fixed work hours and overtime did not apply to home care. Workers frequently reported staying past their official hours of work to help out their clients. We therefore revised the "work overtime" item and added the term "authorized hours" to all workload items to refer to the paid work hours, such as: "How often do you work longer than the authorized hours?"

The focus groups had revealed that clients often assigned additional tasks that were not authorized by the IHSS. We therefore added the item: "How often does your client give you additional tasks which are not authorized by the IHSS?" In the course of subsequent cognitive interviews, some home care workers responded that they did additional tasks not because the "client gives them" these tasks, but out of their own volition (English HCW: "Extra tasks? I really cannot figure it out. Because all he needs, I give it to him, even if it's not awarded to

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him.”). The item was revised once more to “How often *do you do* additional tasks which are not authorized by the IHSS?”

Many home care workers felt criticized when we asked them if they had “too much work to do their job *well*” (English HCW: “Are you questioning if I do my job well?”). Because of this finding as well as the issues raised in the first round of cognitive interviews, we dropped this item.

Job control. The focus groups and the first round of cognitive interviews showed that home care workers experienced job control not only as *individual* job control (i.e., the home care worker decides herself how and when to perform a task) but also as *joint* job control (i.e., the home care worker *and* client decide together how and when to perform tasks). We therefore created two job control scales: 1) individual job control (“How often can you *decide yourself...*?”) and 2) joint job control (“How often do you and your client *decide together...*?”). While most home care workers felt they had no control over the number and type of work tasks, they referred to job control as having the option to decide (either alone or together with the client) how to do a task. This led to the following item: “How often can you decide how you do your tasks?”

Social support. The focus groups and first round of cognitive interviews had shown that home care workers have little or no interaction with coworkers. We therefore decided not to include any items on coworker support in the questionnaire. Recognizing the importance of emotional and appraisal support from home care workers’ clients, we dropped the single JCQ item that only addressed the instrumental component of social support (“How much is your client helpful to you in getting your job done?”). Instead we selected items from a previously validated social support scale that addresses emotional and appraisal support, which had been used among

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caregivers (Heaney 1991). All of these items were meaningful to the home care workers and elicited similar responses across language groups.

Phase 4: testing psychometric scale properties

The cognitive interviews informed us that the constructs were meaningful for a racially/ethnic diverse group of home care workers and that the home care workers understood the format of the items. After this process we developed four different scales with three items each. In a fourth and final phase we tested whether the items of each scale held together and formed a homogeneous construct. The aim of this phase was to investigate whether the four constructs were distinct enough to be treated as separate scales. Also, we aimed to ensure that we were measuring the same constructs across language groups and that each item represented the construct well without substantial measurement error.

We collected data from 404 home care workers ($n = 178$ English, $n = 68$ Spanish, and $n = 158$ Chinese homecare workers) who were recruited through the administrative database from the IHSS. The recruitment process started with an initial mailing to 3965 IHSS home care workers who were randomly selected from a list of home care workers who had worked at least 1 year in this job. Potential participants were sent a recruitment package and asked to return a postage paid card if interested. The response rate of 12 % was similar across language groups. Of those cards received expressing interest in the study, the final rate that was enrolled and completed the survey was 66%. An additional 90 home care workers were recruited through a list of participants from former IHSS information meetings. Their response rate was at 26%. According to the interview protocol, trained university and agency staff phoned these home care workers, explained the project, asked to provide socio-demographic information and then to respond to the set questions shown in Table 1. The majority of participants (87%) were women

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with an average age of 52 years. The average job tenure was six years, and participants worked on average 27 hours per week in this job. Most workers cared for one (71%) or two (21%) clients.

Method. To test the internal consistency of each scale, we calculated Cronbach's alpha for each language group separately. A high Cronbach's alpha indicates that the items of a scale relate to one another and assess similar aspects of a construct (e.g., workload, job control, social support) (Cortina 1993). With an increase of intercorrelations among the items of each construct, the Cronbachs' alpha also increases. We followed the guidelines of Everitt and Skondral (2010) for the interpretation of good ($\alpha > .80$), acceptable ($\alpha > .70$), minimally acceptable ($\alpha > .60$), and undesirable ($\alpha < .60$) internal consistency.

In addition, we conducted multiple-group confirmatory factor analyses (CFA) to examine whether the scales had the same structure across three language groups. In a first step, we set up a model with the four constructs as factors (i.e., workload, individual job control, joint job control, and social support). Each factor was supposed to be measured by the items developed in the previous phases and is listed in Table 2. The factor loadings for each item represent correlations between that item and the factor the item is supposed to measure. Ideally, factor loadings should exceed .60 (Marsch and Hau 1999). To confirm that the factors held for this sample, the model had to show a sufficient model fit. Following Bentler (2007) we report the Root Mean Square Error of Approximation (RMSEA) and the Comparative Fit Index (CFI). A combination of a CFI $>.90$ and a RMSEA < 0.06 indicate a good fit (Hu and Bentler 1999). In a second step, we compared the factor loadings between the three language groups in order to test whether item-factor relationships were similar across groups. We set up a second model in which factor loadings were constrained to be equal across groups; in other words, factor loadings were

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not allowed to vary across languages. Next, we compared these two models by computing the difference in the Comparative Fit Index (ΔCFI). A difference smaller than 0.01 ($\Delta\text{CFI} < .01$) indicates that two models have the same level of model fit, thus confirming that factor loadings are equivalent across different language groups (Cheung and Rensvold 2002). For a difference between .01 and .02, equivalence can still be assumed but not fully confirmed.

Results.

Cronbach's alphas, as indicators of the internal consistency of the scales, are reported in parentheses in Table 2. By and large the alphas for the scales across language groups are acceptable. However, for the Spanish sample the alpha is below .70 for the workload and social support scales. For the Chinese group the alpha for the joint job control scale is exceptionally high.

The confirmatory factor analyses reveal that the four factors workload, individual job control, joint job control, and social support can be treated as independent constructs ($\chi^2 (df) = 253.93(144), p < .001, \text{RMSEA (CI)} = .04 (.04 -.05), \text{CFI} = .96$). Table 2 shows the factor loadings for all three language groups. Most factor loadings are above the critical cutoff of .60 (Marsch and Hau 1999), which indicates that these items represent the construct well. The workload item "finish all tasks" is low for all three groups. Furthermore, two out of three social support items are low for the Spanish subgroup. While factors loadings below .60 are problematic, some authors suggest that loadings above .40 are still acceptable among small samples (Hair et al. 1998). The factor loadings for joint job control are exceptionally high among the Chinese subgroups (.97 - .99). These high factor loadings stem from high intercorrelations of the three items, ranging from .96 to .98.

[INSERT TABLE 2 ABOUT HERE]

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In order to test more rigorously whether the items are comparable across language groups (i.e., whether they measure the same aspects of a construct), we tested whether the factor loadings differed significantly across groups. When not allowing the factor loadings to vary across groups, (i.e., all factor loadings are equal in all groups), the four-factor model shows an acceptable model fit. All fit indices meet the cutoff criteria ($\chi^2 (df) = 305.55(160)$, $p < .001$, RMSEA (CI) = .05 (.04 -.06), CFI = .95; Δ CFI = .01). The Δ CFI at .01 indicates that equivalence can be assumed across groups. Therefore, the items developed through the multiple phases for workload, individual and joint job control, and social support can be used in surveys for assessing psychosocial work characteristics among English-, Spanish-, and Chinese-speaking home care workers.

Discussion

The aim of this study was to present strategies (1) for identifying salient psychosocial work characteristics for home care workers, (2) for creating survey measures of these work characteristics that are meaningful for home care workers, and (3) for ensuring that these measures can be used across language groups.

Using both qualitative and quantitative methods in four phases, we developed survey measures for psychosocial work characteristics that are equivalent across language groups and, more importantly, that are meaningful for our target population of home care workers. First we confirmed through focus groups that workload, job control, and social support are salient dimensions of work for home care workers. Next through cognitive interviews, we found that existing questionnaire items needed to be modified so that the questions make sense to home care workers and capture the unique aspects of home care work. Finally, in quantitative analysis, we confirmed that the modified items are interpreted and responded to similarly across three

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language groups. This allows us to conclude that we were actually measuring the same constructs among all participants. This complex process was time consuming and required considerable funding and staff investment. However, as discussed below, we regard this process as important and “worth the effort” when conducting research with non-traditional and multi-lingual worker populations.

Benefits and challenges of applying multiple methodologies for the questionnaire development process

The benefits of this process were manifold. Through focus groups and cognitive interviews we identified salient constructs for home care workers. This facilitated the process of selecting and refining scale items. For example, we learned that the traditional concept of fixed work hours and clear assignment of work tasks does not apply to home care workers in a consumer-directed model. In the caregiving environment the blurred boundaries between work and personal relationship make it hard to define work hours. Benjamin and Matthias (2004b) found that home care workers in consumer-directed models are four times more likely than agency home care workers to perform additional tasks without pay. These findings suggested that we need new ways of thinking about the work life of home care workers, and we revised the workload items accordingly.

Furthermore, focus groups and cognitive interviews revealed that, for all three language groups, home care workers experienced job control both individually and shared with their client – an aspect which had not yet been addressed in the occupational health literature. This finding led us to develop a new measure for joint job control that captured the dyadic interaction between home care workers and clients. Whereas cognitive interviews ensured that the new measure was understood across language groups, we needed an additional quantitative phase to

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ensure that items measure similar aspects of the construct across languages. Cross-cultural research has shown that we risk drawing false conclusions on relationships between variables or comparisons between groups when measures have not been statistically tested for equivalence across languages (e.g., Azocar et al. 2001).

The quantitative testing confirmed that the scales for individual and joint job control measure different aspects of job control and that they should be treated as independent, but correlated measures. The multiple group comparison also ensured that the items measure similar constructs across the three language groups. We do need to note though that among the Chinese home care workers factor loadings as well as Cronbach's alpha are exceptionally high for the joint job control scale. This indicates that the items may not contribute unique information but measure redundant aspects of the factor. Whereas we can conclude that we successfully developed a new joint job control scale for the Spanish- and English-speaking home care workers, we suggest further refining the scale for Chinese-speaking workers.

Our multi-ethnic, multi-lingual workforce required the development of measures in three languages. We learned from the first round of cognitive interviews that a standard forward and backward translation was insufficient (Fujishiro et al. 2010). The most cumbersome process was conducting cognitive interviews in English, Spanish, and Chinese (Phase 2). The iterative process required the interviewers and researchers to meet after each set of cognitive interviews in order to adjust the wording of items and to ensure equivalent questionnaire versions across all languages. A major benefit of this approach is the chance to apply *decentering* in the item refinement process, which involves modifying items in all three languages simultaneously instead of developing items in English first and then making adjustments in other languages (Nápoles-Springer et al. 2006). For example, in Phase 2 the Spanish participants informed us that

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workload item “have enough time” could be misunderstood. We changed the item accordingly in all three languages and realized that it was more easily understood in English and Chinese as well. Despite the benefits of the procedure used in Phase 2, we chose a less resource-intensive approach in the second round of cognitive interviews (Phase 3): We started with the cognitive interviews in English, refined the English items, modified the Spanish- and Chinese-language versions accordingly, and subsequently conducted a smaller number of Spanish and Chinese interviews. Researchers need to balance these two approaches by taking into consideration the availability of existing measures along with previous translations for a given population as well as time constraints and resources.

Strengths and Limitations

When reflecting on the findings of this study, it is important to recognize some limitations. First, our Spanish sample was rather small for quantitative testing, which may have affected the lower factor loadings for this group. A caveat for conducting confirmatory factor analyses is that the procedure requires large sample sizes – ideally 100 participants per group (Marsh et al. 1998) – which we often do not have available when surveying low wage, multiethnic worker populations. When samples are small, a comparison of Cronbach’s alphas across language groups is a reasonable alternative (Iacobucci and Duhachek 2003). The small number of participants for the Spanish sample resulted from our difficulty in identifying a sufficient number of home care workers with Hispanic surnames whose preferred language was Spanish. While our recruitment efforts based on surnames yielded an equivalent participation rate across the three ethnicities, our final sample of Spanish speakers was small.

Across ethnicities our respondents were a select group that may not reflect the entire population of workers. The response rates for the recruitment for the quantitative survey (Phase

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4) implies that the more motivated and educated home care workers agreed to participate. This phenomenon has been discussed in the public health literature and shows that we often do not reach the most vulnerable worker populations through quantitative approaches (Owens et al. 2000).

Finally, this paper presents measures that have been developed and tested for home care workers in a consumer-directed model, and therefore, may not be appropriate for agency home care workers. While tailoring measures to a specific worker population ensures their meaningfulness, it limits their generalizability to other occupations. Nevertheless, the scales provide a starting point for developing measures for workers in related occupations. Furthermore, as the employment of racial and ethnic minority workers in home care jobs is on the rise in most post-industrial societies, these findings can be beneficial for occupational health research in other national contexts.

Conclusion

This complex process of scale development has not only resulted in meaningful scales for this diverse worker group but has also clarified why existing items and scales may not be appropriate in certain occupational settings and worker groups. A combined approach with qualitative and quantitative methods stratified by language ensures the informed adaptation of existing scales and the development of new scales. We would like to conclude with recommendations that stem from the most important lessons we have learned in this process. Based on our experience a core step in the multi-lingual questionnaire development process is the cognitive interviews, which provide the option for decentering. Focus groups are important when researchers are not familiar with the specific work process and dynamics in the target occupation, such as non-traditional work like home care. We regard quantitative testing as essential for ensuring that the scales

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measure the same constructs across language groups. With sufficient sample sizes, multiple-group factor analyses are an ideal approach to ensure equivalence of the scales across language groups. However, we do acknowledge that often this may not be feasible when surveying low-wage multi-ethnic worker populations. In these cases a comparison of Cronbach alphas is an alternative approach. In conclusion, researchers and funders need to be sensitive to additional time and costs associated with the development of adequate measures for nontraditional, multi-lingual worker populations. They also need to take into consideration the availability of existing measures along with translations, the need for tailored instruments for their study, and the consistency of findings from previous stages of the research.

Key messages

- Validated questionnaires measuring psychosocial work characteristics need to be adapted for multiethnic workers to create questions that are meaningful across languages and cultures.
- A combined approach with qualitative and quantitative methods stratified by language ensures the informed adaptation of existing scales and the development of new scales.
- Cognitive interviews provide insight into the different understandings and connotations of the same item across languages, whereas a confirmatory factor analysis ensures that the items apply equally across language groups.

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Table 1. Development of questionnaire items through cognitive interviewing

Scale	Original JCQ items	Item revision in Phase 2	Item revision in Phase 3	Final items
Workload	I have enough time to get the job done.	How often do you have enough time to get the job done?	How often can you finish your tasks? How often do you work overtime? How often does your client give you additional tasks which are not authorized by IHSS?	How often can you finish your tasks within the authorized hours? (w11) How often do you work longer than the authorized hours? (w12) How often do you do additional tasks, which are not authorized by IHSS? (w13)
	I have too much work to do everything well.	How often do you have too much work to do everything well?	How often do you have too much work to do everything well?	
Individual job control	I have a lot of say about what happens on my job.	How much say do you have about what happens on your job?	How often can you decide yourself which tasks you need to do at work?	How often can you decide yourself which tasks you need to do at work? (ijc1)
	I am given a lot of freedom to decide how to do my own work.	How much freedom do you have to decide how to do your own work?	How often can you decide yourself which tasks to do first?	How often can you decide yourself which tasks to do first? (ijc2)
			How often can you decide yourself how you do your tasks?	How often can you decide yourself how you do your tasks? (ijc3)

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Table 1 (continued).

Scale	Original JCQ items	Item revision in Phase 2	Item revision in Phase 3	Final items
Joint job control			How often do you and your client decide together which tasks you need to do at work?	How often do you and [client's name] decide together which tasks you need to do at work? (jjc1)
			How often do you and your client decide together which tasks to do first, often or not often?	How often do you and [client's name] decide together which tasks to do first? (jjc2)
			How often do you and your client decide together how you do your tasks?	How often do you and [client's name] decide together how you do your tasks? (jjc3)
Social support	The people I work with can be relied on when I need help.	How much can other homecare workers be relied on when you need help?	In the past four weeks... how often did your client show care and concern for you?	In the past four weeks... how often did [client's name] show care and concern for you? (ss1)
	My supervisor is helpful in getting the job done.	How much is your client helpful to you in getting your job done?	how often did your client show appreciation towards you?	how often did [client's name] show appreciation towards you? (ss2)
			how often did your client give you praise?	how often did [client's name] give you praise? (ss3)

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Table 2. Cronbach's alpha and factor loadings

Scale	Item	Cronbach's alpha / Factor loadings		
		English	Spanish	Chinese
Workload		(.74)	(.65)	(.73)
	... finish tasks [wl1]	.50	.43	.42
	... work longer [wl2]	.93	.92	.93
	... do additional tasks [wl3]	.77	.75	.67
Individual job control	Decide yourself...	(.87)	(.87)	(.87)
	... which tasks you need to do [ijc1]	.83	.81	.81
	... which tasks to do first [ijc2]	.82	.82	.86
	... how to do tasks [ijc3]	.85	.91	.83
Joint job control	Decide together...	(.88)	(.92)	(.99)
	... which tasks you need to do [jjc1]	.87	.87	.99
	... which tasks to do first [jjc2]	.88	.88	.97
	... how to do tasks [jjc3]	.80	.90	.99
Social support		(.80)	(.62)	(.73)
	... show care and concern [ss1]	.79	.50	.80
	... show appreciation [ss2]	.86	.79	.89
	... give praise [ss3]	.83	.42	.73

Note. $n_{English} = 176$; $n_{Spanish} = 68$; $n_{Chinese} = 158$; Cronbach's alphas appear in parentheses.

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Figure 1. Questionnaire development process

