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On the potential impact of directionality on emotion processing in interpreting

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Abstract

The main aim of the study is to investigate the process of interpreting emotionally-laden content in the two directions (i.e., L2>L1 vs. L1>L2). In line with previous research on bilingualism, there is a psychological distance when processing the non-native relative to the native tongue, reflecting a decreased sensitivity to affect-laden stimuli in L2 compared to L1. Yet thus far only little attention has been devoted to investigating how interpreters process emotionally-laden as compared to neutral stimuli when interpreting. Additionally, in the context of language processing in interpreting, previous studies have shown an interpreting asymmetry, pointing to more cognitively taxing operations engaged in interpreting in the L1-L2 than L2-L1 direction; however, it remains under-investigated whether emotion processing might be modulated by interpreting directionality. To this aim, in the present pilot study, five professional interpreters were asked to interpret negatively-valenced as well as neutral sentences, both from Polish (L1) into English (L2) and in the opposite direction. To measure emotional responding, skin conductance (SC) method was triangulated with a self-report measure (SUPIN S30, the Polish adaptation of the PANAS questionnaire, Positive and Negative Affect Schedule). The obtained results showed an increased emotional responding, as reflected in SC results, in the process of interpreting a negatively-valenced compared to neutral content, irrespective of interpreting direction. The obtained results may contribute to research on emotional language processing in the context of interpreting.

Keywords: interpreting; emotion; interpreting directionality; skin conductance.

1. Introduction

Previous research into bilingual emotional responding has pointed to a psychological distance when processing the non-native tongue, reflecting a decreased sensitivity to emotionally-laden stimuli in the non-native (L2) compared to the native tongue (L1), as has previously been shown in self-report as well as behavioral measures (e.g., Harris, 2004; Pavlenko, 2005; Caldwell-Harris & Ayçiçeği-Dinn, 2009; Caldwell-Harris, 2014; Costa et al., 2014; Jankowiak & Korpal, 2018). Such a psychological distance has been hypothesized to result from a usually lower proficiency level in L2 than L1, later age of L2 acquisition, or more formal (non-emotional) L2 learning context (Harris, 2004; Caldwell-Harris, 2014; Costa et al., 2014; Jankowiak & Korpal, 2018). For example, Costa and colleagues (2014) found a negative correlation between L2 proficiency level and L2 psychological distance, whereby low proficient L2 learners experienced an increased psychological distance in response to emotionally-laden stimuli presented in their non-native language. Alternatively, an attenuated emotional resonance to L2 might result from the fact that late bilingual speakers start acquiring their L2 once their emotional regulation systems have already been developed (Bloom & Beckwith, 1989), and thus emotionally-valenced lexical items acquired later in life are relatively weakly connected with the emotional regions of the brain (Harris, 2004; Caldwell-Harris, 2014). Finally, it has been postulated that emotional responding might be modulated by the context of L2 learning, with learning via immersion leading to a more native-like emotional responding than learning in the formal school setting (Dewaele, 2010; Degner et al., 2012).

Thus far little attention has been devoted to examining the role of directionality (L2>L1 vs. L1>L2) and stimuli valence (neutral vs. negative) in emotional responding observed in an interlinguistic process of interpreting, which involves a high degree of language co-activation. Most studies on the role of directionality in interpreting drew on concepts from cognitive psychology; interpreters have often been defined as extreme bilinguals (Obler, 2012), as, due to the extremely frequent switching between the two languages, they can effectively select the target language and inhibit the non-target language (cf. Green's Inhibitory Control Model, 1998). As for directionality, previous studies have shown an interpreting asymmetry, pointing to more cognitively taxing operations engaged in interpreting in the L1-L2 than L2-L1 direction (e.g., Hyönä et al., 1995; de Bot, 2000). Yet such experiments have rarely been devoted to investigating the interpretation of emotionally-laden stimuli, and thus it remains under-investigated whether the psychological distance observed when processing emotionally-valenced stimuli in L2 may be additionally modulated by interpreting directionality. Therefore, the present study examines the process of L2-L1 (English-Polish) and L1-L2 (Polish-English) interpreting of affect-laden sentences, thus combining psycholinguistics and Interpreting Studies. Consequently, the effects observed in previous psycholinguistic studies related to emotional language processing in L1 and L2 are tested in the context of interpreting, which has thus far been little researched.

The importance of studying psycho-affective determinants of the interpreter's performance has been repeatedly emphasized in theoretical considerations related to interpreting practice (Brisau et al., 1994; Timarová & Ungoed-Thomas, 2008; Pöchhacker, 2011; Rosiers et al., 2011; Bontempo & Napier, 2011; Rojo, 2017). It is often assumed that interpretation, both understood as a process and a final product, is influenced not only by the interpreter's linguistic skills and cognitive abilities, but also by some other psychological concepts, such as motivation, personality, self-esteem, and stress resistance (Chabasse & Kader, 2014). As early as in the 1990s, Brisau et al. (1994) pointed out that interpreting training programmes seem to disregard an interpreting trainee as a learner with a specific psychological makeup. More recently, Rojo (2017) suggested that emotions may impact not only translators' processing styles, but also translation reception as well as translation and interpreting quality. In general, it appears that the psychology of interpreting should be factored in when discussing interpreters' performance.

Drawing from these considerations, selected psychological features have been empirically tested to date in Interpreting Studies. For example, previous research has examined personality profiles of professional and student interpreters using psychometric instruments (Szuki, 1988; Schweda Nicholson, 2005; Moser-Mercer, 2005). Also, in a study on psycho-affective factors in interpreting, Bontempo and Napier (2011) observed that emotional stability is a predictor of self-perceived competence in interpreting. As interpreting is often referred to as a stress-provoking activity, being emotionally stable may thus help interpreters cope with stressors and perform well under pressure. On the whole, a few studies conducted in Interpreting Studies in recent decades have aimed at testing interpreters' psychological traits. Potentially, such research may help identify psychological features that mitigate the adverse impact of cognitive load and stress, which are inherent in interpreting.

This notwithstanding, the notion which has only rarely been researched in Interpreting Studies is interpreters' exact psychophysiological responding, that is their emotional reaction to the content of the material presented to them in the source language which is then interpreted into the target language. In empirical research, emotional responding can be measured in a number of ways. According to Schachter and Singer's two-factor theory of emotion (1962), emotions are composed of two elements: physiological arousal and cognitive interpretation based on individual's personal experience. Following Schachter and Singer's conceptualization of emotion, research on emotional responding often employs psychophysiological methods (such as skin conductance) or self-report measures. Skin conductance (SC) indexes the activity of the autonomic nervous system and measures electrodermal response based on a skin conductance level (SCL) resulting from sweating, and is therefore interpreted as a marker of emotional arousal. Self-report measures, on the other hand, test emotional states based on an individual's personal experience.

To the best of our knowledge, thus far one skin conductance study has examined interpreters' emotional responses to source language stimuli in simultaneous interpreting. Korpal and

Jasielska (2019) tested professional conference interpreters, who were asked to simultaneously interpret speeches from Polish (L1) into English (L2): a neutral speech about *savoir vivre* in telephone communication and an emotional speech about the loss of a child. Along with the SC as a physiological measure of emotion, SUPIN S30 (Brzozowski, 2010), the Polish adaptation of PANAS (*Positive and Negative Affect Schedule*, Watson et al., 1988), was used in the experiment as a self-report measure. The results showed that interpreters were affected by the speaker's negative emotions, which was reflected in both an elevated physiological arousal as well as more pronounced self-reported emotional states in response to an emotional speech as opposed to a neutral one. Therefore, the study revealed that interpreters tend to converge emotionally with the speaker, which might potentially help them understand the emotions present in the material to be interpreted.

Importantly, Korpal and Jasielska (2019) tested emotional responding only in the L1 to L2 interpreting direction, and thus it appears that a potential effect of interpreting directionality (L2 to L1 vs. L1 to L2) on interpreters' emotional responding has not been tested to date. Thus far, empirical research on directionality in interpreting has mostly focused on the cognitive effort invested in L2 to L1 and L1 to L2 interpreting (also referred to as *retour interpreting*). As already mentioned, much research has suggested that interpreting into the interpreter's foreign language is more cognitively taxing than interpreting in the opposite direction (Kurz, 1994; Hyönä et al., 1995; de Bot, 2000). On the other hand, there is some evidence showing that retour interpreting can be actually more accurate than L2 to L1 interpreting (Tommola & Helevä, 1998), and that the anticipation strategy is more effective when interpreting into L2 (Kurz & Färber, 2003), and thus research on the impact of directionality on interpreting accuracy and interpreters' cognitive effort appears to be inconclusive (for a detailed discussion of directionality in Interpreting Studies, please refer to Bartłomiejczyk, 2006). Although interpreting directionality has been researched in Interpreting Studies, to the best of our knowledge its impact on the processing of emotionally-laden stimuli has not been empirically tested yet. Therefore, the present study aims at investigating the interaction between interpreting direction and interpreters' emotional responding.

2. Method

2.1. Aims and hypotheses

In this pilot study, we aim to investigate how interpreters process emotional content when interpreting in the English-Polish language pair, both from English (L2) into Polish (L1) and in the opposite direction. In line with previous research, emotions encountered in the non-native language result in a decreased emotional responding compared to the native tongue (e.g., Harris, 2004; Caldwell-Harris & Ayçiçeği-Dinn, 2009; Jankowiak & Korpal, 2018). Additionally, owing to the fact that, when interpreting, interpreters access the meaning of an emotionally-laden stimulus in the source language, it is assumed that it is the meaning present in the source language that

will modulate an emotional response to the sentence to be interpreted. Following these two assumptions, it is hypothesized that emotional responding, as reflected in skin conductance and SUPIN S30 (the Polish adaptation of PANAS, Watson et al., 1988) scores, will be most pronounced for (1) emotionally-laden stimuli in L1-L2 direction, in the case of which interpreters are presented with stimuli in their native tongue, followed by (2) emotionally-laden stimuli in L2-L1 direction and (3) neutral stimuli in both L1-L2 and L2-L1 directions. Thus, we assume that there will be no differences in emotional reaction to neutral stimuli in either direction.

2.2. Participants

The pilot study was conducted on 5 participants (3 women, 2 men, M_{age} = 33.8, *SD* = 9.42), who were all professional interpreters with Polish as their native tongue and English as their working language. They had had at least 2 years of professional experience in interpreting prior to the experiment (M_{years} = 9.2, *SD* = 11.73). All of them had completed interpreter training at a university level and had been experienced in performing interpreting both from English into Polish (L2>L1 interpreting) as well as from Polish and English (L1>L2 interpreting). All of the participants had normal or corrected to normal vision, and they did not suffer from any language, neurological, or/and psychological disorder.

2.3. Materials

The materials used in the experiment included 30 Polish (L1) and 30 English (L2) sentences, which were divided into two categories: 15 negatively-valenced and 15 neutral sentences in each language. Examples of the experimental stimuli are provided in Table 1. The sentences did not include translation equivalents, so as to avoid the translation priming effect as a potential confounding variable. This means that two independent sets of sentences were prepared—in Polish and in English—, and thus participants were never asked to interpret the same sentence in both directions. Polish sentences were read and recorded by a male native speaker of Polish, while English sentences were read and recorded by a male English native speaker.

The characteristics of sentences used in the experiment are provided in Table 2. In general, English sentences were characterized by a larger number of words compared to Polish sentences, since Polish has a more synthetic structure than English. For example, nouns in Polish are inflected, while pronouns and articles are not used as often as in English.

In order to ensure that the stimuli were adequate representatives of the categories ascribed to them, they were pre-tested using web-based Likert-type surveys on stimulus valence. While Polish experimental stimuli were rated by native speakers of Polish, English materials were assessed by English native speakers. Raters whose scores were more than 3 *SD*s from the mean were excluded from final analyses. Table 3 provides the number of raters included in the analyses together with their demographic data. The raters who took part in these pretests did not participate in the SC experiment.

TABLE 1

Examples of the experimental stimuli

	NEGATIVELY-VALENCED	NEUTRAL
Polish	Ktoś ukradł mu wczoraj portfel z dokumentami. (Eng. *Someone stole his wallet with documents yesterday.*)	Mój mąż chodzi spać po obejrzeniu serialu. (Eng. *My husband goes to sleep after watching a TV show.*)
	Jej nowy samochód nagle zapalił się i wybuchnął. (Eng. *Her new car suddenly caught fire and exploded.*)	Jej mama mieszka w bloku na ostatnim piętrze. (Eng. *Her mother lives in a block of flats on the top floor.*)
	Tomek złamał nogę i nie pojechał na wakacje. (Eng. *Tomek broke his leg and did not go on vacation.*)	Listonosz przyniósł dwa listy dla mojej córki. (Eng. *The postman brought two letters for my daughter.*)
	Chłopiec przewrócił się na chodniku i rozpłakał. (Eng. *The boy fell over on the sidewalk and cried.*)	Paulina podlewa kwiaty dwa razy w tygodniu. (Eng. *Paulina waters the flowers twice a week.*)
English	She has been diagnosed with a brain tumor.	Janet is a teacher at a secondary school.
	Her dad died when she was five years old.	He works in this building on the fourth floor.
	Yesterday he crashed his brand-new car.	They rent their flat to two chemistry students.
	She lost all her money at the casino.	The kids were sitting on the bench.

TABLE 2

The characteristics of Polish and English sentences used in the experiment

	NUMBER OF WORDS PER SENTENCE	TOTAL READABILITY OF A SET OF SENTENCES
Polish sentences – neutral	7-8 (M = 7.27, SD = .46)	2/7 (according to *Jasnopis*, where 1 = very easy, 2 = easy, 7 = very difficult)
Polish sentences – negative	7-8 (M = 7.47, SD = .52)	2/7 (according to *Jasnopis*, where 1 = very easy, 2 = easy, 7 = very difficult)
English sentences – neutral	7-10 (M = 8.27, SD = 1.03)	85.2 (according to the Flesch-Kincaid Index of readability, where texts above the index of 80.0 are considered to be easy/very easy)
English sentences – negative	7-10 (M = 8.27, SD = 1.1)	90.6 (according to the Flesch-Kincaid Index of readability, where texts above the index of 80.0 are considered to be easy/very easy)

TABLE 3
Demographic characteristics of raters of the normative studies

	NUMBER OF RATERS INCLUDED IN THE ANALYSES	MEAN AGE
Polish sentences	N = 32 (22 women, 10 men)	M_{age} = 33.93, *SD* = 7.89
English sentences	N = 34 (17 women, 16 men, 1 other)	M_{age} = 25.68, *SD* = 9.03

With a view to ensuring that all of the sentences were either neutral or negatively-valenced, raters were asked to complete a web-based survey, in which they rated negatively-valenced, neutral, and positive (filler) sentences on a 7-point Likert scale, where 1 represented very negatively-valenced and 7 very positively-valenced sentences.

The results of a repeated measures *ANOVA* with sentence type as factor for Polish stimuli showed a main effect of sentence type, $F(2, 66) = 925.21$, $p < .001$, $\eta_p^2 = .966$. Pairwise comparisons further showed that Polish negatively-valenced sentences ($M = 1.88$, $SD = .06$) were rated as more negative compared to neutral sentences ($M = 4.25$, $SD = .04$), $p < .001$, as well as than positively-valenced filler utterances ($M = 5.91$, $SD = .07$), $p < .001$. Additionally, neutral sentences were evaluated as more negative than positively-valenced filler sentences, $p < .001$.

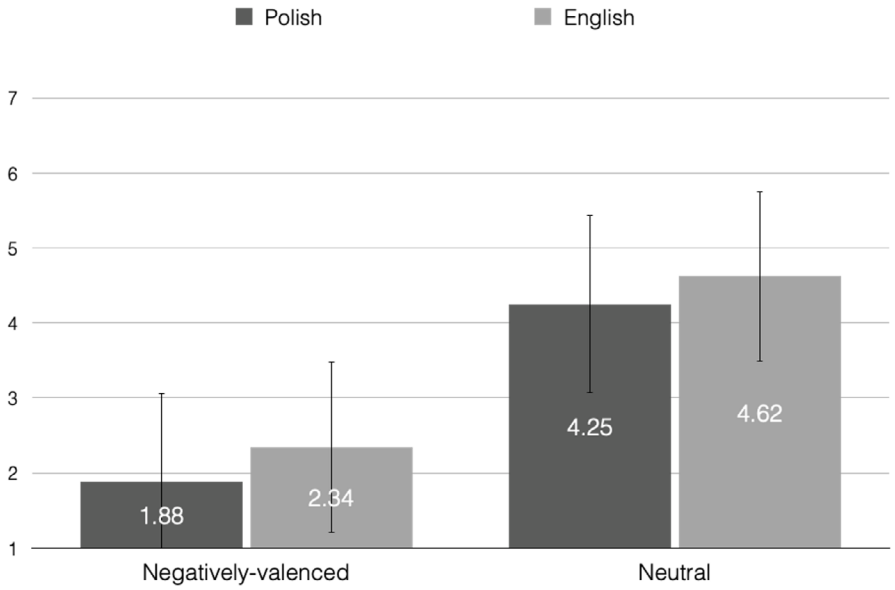
Similarly, the results of a repeated measures *ANOVA* with sentence type as factor for English stimuli showed a main effect of sentence type, $F(2, 62) = 514.87$, $p < .001$, $\eta_p^2 = .943$. Pairwise comparisons further showed that English negatively-valenced sentences ($M = 2.34$, $SD = .09$) were rated as more negative compared to neutral sentences ($M = 4.62$, $SD = .07$), $p < .001$, as well as than positively-valenced filler utterances ($M = 6.15$, $SD = .09$), $p < .001$. Additionally, neutral sentences were evaluated as more negative than positively-valenced filler sentences, $p < .001$. The results of the normative studies on the experimental (neutral and negatively-valenced) stimuli are summarized in Figure 1.

2.4. Procedure

The pilot study was conducted in the Language and Communication Laboratory at the Faculty of English, Adam Mickiewicz University, Poznań. At the beginning of the experiment, participants were familiarized with the procedure of the experiment and asked to sign the informed consent form. All participants were screened for potential language and psychological disorders (e.g., depression), as well as visual impairments by means of filling in a self-report questionnaire. They were asked a few yes/no questions on a self-designed questionnaire, where "yes" would mean that they had been diagnosed with a given disorder or impairment. Since none of these impairments were reported, a total of 5 participants took part in the pilot experiment. Then, participants were instructed that their task would be to interpret the auditorily presented negative and neutral sentences in the interpreting direction of a specific block

FIGURE 1

Mean valence ratings for the negatively-valenced (left-hand side) and neutral (right-hand side) Polish (dark gray) and English (light gray) sentences



(i.e., L1-L2 or L2-L1 interpreting direction), right after hearing each sentence. The stimuli to be interpreted were delivered to participants through headphones with a pre-set volume, with a 5-second break after each sentence of a given block.

To calculate skin conductance responses, a PsychLab SC amplifier was used in the study. To measure skin conductance, two re-usable 8 mm diameter silver chloride electrodes were attached to the medial phalanx of the index and middle finger of the non-dominant hand of each participant. The PsychLab Data Acquisition software was used to record skin conductance data, adopting an acquisition sample rate of 1,000 Hz and idle sample rate of 500 Hz. To analyze the recordings, the PsychLab Analysis software was used. The number of skin conductance responses was calculated five times during the whole experimental procedure: (1) before the experiment (baseline), (2) during the interpretation of a set of 15 negatively-valenced sentences in Polish, (3) during the interpretation of a set of 15 neutral sentences in Polish, (4) during the interpretation of a set of 15 negatively-valenced sentences in English, (5) during the interpretation of a set of 15 neutral sentences in English. The order of the blocks' presentation was randomized and counterbalanced across participants.

As for SUPIN S30 (the Polish adaptation of PANAS, *Positive and Negative Affect Schedule*, Watson et al., 1988), each participant completed the questionnaire five times in the course of the experiment: before the experiment (baseline) and after the interpretation of each set of sentences. Answers were given on a 5-point Likert scale ("1" = emotions are experienced very slightly or not at all; "5" = the strength of the emotion experienced is very significant).

After the experiment, participants were informed about the main objective of the study in detail; i.e., the effect of directionality and valence on emotional responding in interpreting (debriefing). The whole experimental session lasted around 40 minutes. The obtained skin conductance as well as SUPIN S30 data was statistically analyzed using the IBM SPSS Statistics 25 software.

3. Results

SUPIN S30

The analysis performed on the self-ratings obtained from the SUPIN S30 questionnaires was based on values for all negatively-valenced adjectives (N = 15), such as *przygnębiony* (Eng. sad), *zmartwiony* (Eng. upset), etc. The Negative Affect Score was calculated in line with the scoring instructions (Brzozowski, 2010). Once the scores were calculated, a 2 valence (negatively-valenced vs. neutral sentences) × interpreting direction (L1-L2 vs. L2-L1) repeated measures *ANOVA* was conducted, which, however, yielded no statistically significant main effect of valence [$F(1, 4) = 1.14$, $p = .346$, $\eta_p^2 = .221$], of interpreting direction [$F(1, 4) = 8.45$, $p = .073$, $\eta_p^2 = .593$], and no interaction between valence and interpreting direction [$F(1, 4) = .005$, $p = .948$, $\eta_p^2 = .001$]. Mean SUPIN S30 results for negatively-valenced and neutral stimuli in each interpreting direction are provided in Figure 2 and Table 4.

FIGURE 2

Mean SUPIN S30 results for the negatively-valenced (left-hand side) and neutral (right-hand side) sentences in the L1-L2 (dark gray) and L2-L1 (light gray) interpreting direction

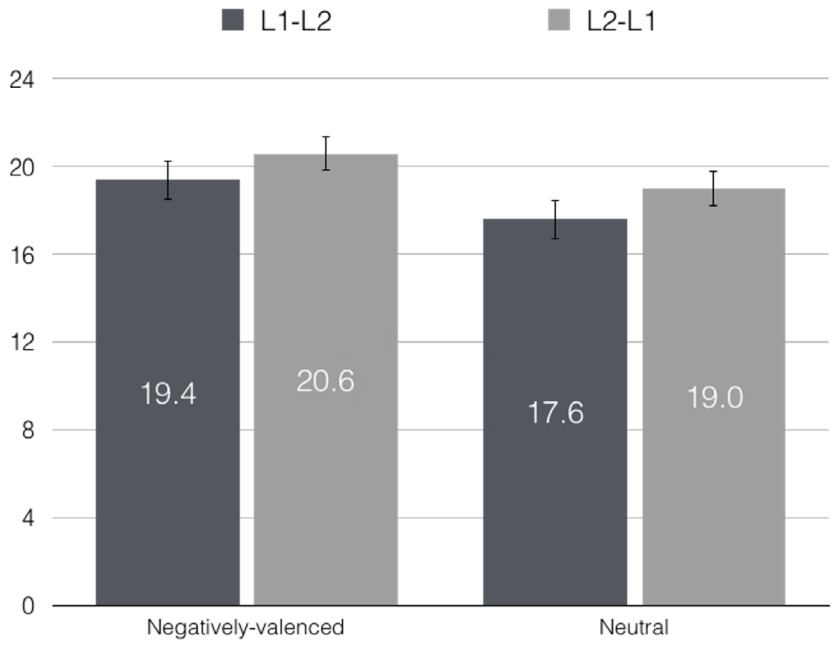


TABLE 4

Descriptive statistics for negatively-valenced and neutral stimuli in the L1-L2 and L2-L1 interpreting direction, as reflected in SUPIN S30 scores

	NEGATIVELY-VALENCED	NEUTRAL
L1-L2	*M* = 19.4, *SD* = 5.41	*M* = 17.6, *SD* = 2.97
L2-L1	*M* = 20.6, *SD* = 5.55	*M* = 19, *SD* = 6.16

SKIN CONDUCTANCE

Before analyzing SC responses to specific levels of independent variables (stimulus valence and interpreting directionality), we averaged the number of skin conductance responses to all experimental conditions and compared them with the baseline condition. We adopted 0.02 μS as a threshold for an SC response. A paired-sample *t*-test showed that the experimental conditions (*M* = 11.1, *SD* = 6.77) elicited a greater number of skin conductance responses compared to the baseline condition (*M* = 6.8, *SD* = 4.87), $t(4) = -4.48$, $p = .011$.

Skin conductance responses to the experimental stimuli were further analyzed by means of performing a 2 valence (negatively-valenced vs. neutral sentences) × interpreting direction (L1-L2 vs. L2-L1) repeated measures *ANOVA*. The analysis revealed a main effect of valence, $F(1, 4) = 24.67$, $p = .008$, $\eta_p^2 = .861$. Skin conductance responses were more pronounced to negatively-valenced (*M* = 12.0, *SE* = 3.28) than neutral sentences (*M* = 9.5, *SE* = 2.79). There was no statistically significant effect of interpreting direction, $F(1, 4) = .299$, $p = .614$, $\eta_p^2 = .07$, and no interaction between the two variables, $F(1, 4) = .110$, $p = .757$, $\eta_p^2 = .027$. Mean numbers of skin conductance responses for negatively-valenced and neutral stimuli in each interpreting direction are provided in Figure 3 and Table 5.

4. Discussion

The present study was aimed at elucidating the role of directionality in emotional language interpretation. To this end, we employed the skin conductance (SC) method together with a self-report measure (SUPIN S30 questionnaire) to examine emotional responding of professional interpreters in the process of interpreting emotionally-laden stimuli. We hypothesized that emotional responding will be most pronounced for (1) emotionally-laden stimuli in the L1-L2 direction, in the case of which interpreters are presented with stimuli in their native tongue, followed by (2) emotionally-laden stimuli in the L2-L1 direction and (3) neutral stimuli in both L1-L2 and L2-L1 directions.

In line with what we had expected, we observed a greater number of skin conductance responses in the process of interpreting negatively-valenced compared to neutral stimuli. Such

FIGURE 3

Mean number of skin conductance responses for the negatively-valenced (left-hand side) and neutral (right-hand side) sentences in the L1-L2 (dark gray) and L2-L1 (light gray) interpreting direction

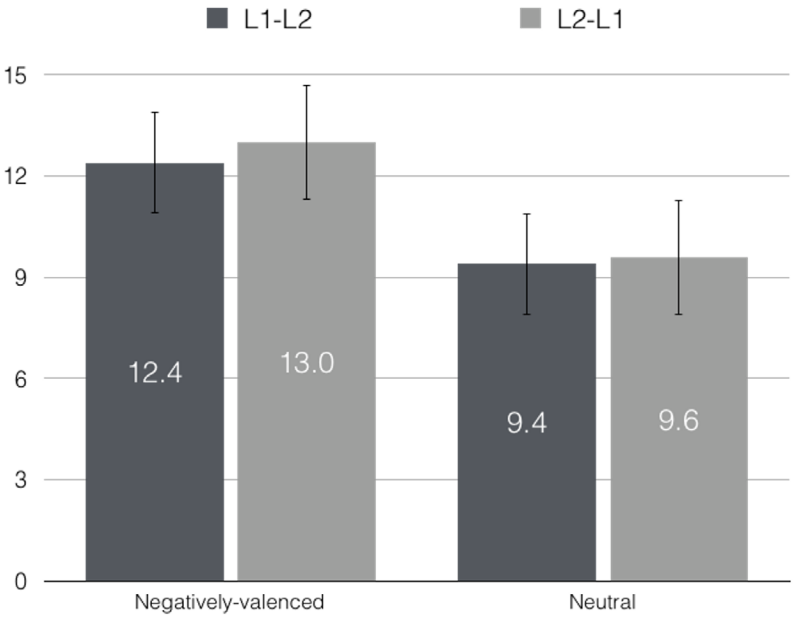


TABLE 5

Descriptive statistics for negatively-valenced and neutral stimuli in the L1-L2 and L2-L1 interpreting direction, as reflected in the number of skin conductance responses

	NEGATIVELY-VALENCED	NEUTRAL
L1-L2	*M* = 12.4, *SD* = 8.2	*M* = 9.4, *SD* = 6.65
L2-L1	*M* = 13, *SD* = 6.63	*M* = 9.6, *SD* = 5.86

findings suggest that professional interpreters do not inhibit access to the emotional meaning of an item to be interpreted; quite the contrary, they are affected by it. This is in line with the results obtained by Korpal and Jasielska (2019), who observed that interpreters tend to converge emotionally with the speaker. In turn, this shows that, even though interpreting is a complex linguistic and cognitive process, interpreters not only invest significant cognitive effort in performing an interpreting task, but they are also emotionally engaged when processing affect-laden stimuli. This might potentially help them understand the emotions conveyed by the speaker. In general, the study results extend previous research on psycho-affective aspects of interpreting (Schweda Nicholson, 2005; Moser-Mercer, 2005; Bontempo & Napier, 2011) by pointing to the fact that emotional responding is yet another psychological construct that could influence the process of interpreting.

Importantly, the effect of valence (negatively-valenced vs. neutral stimuli) was observed in both interpreting directions. This might indicate that professional interpreters, having considerable experience in interpreting in both directions, might be less affected by interpreting directionality, as they might have developed skills that allow them to interpret utterances in both directions with comparable accuracy. Interestingly enough, although no statistically significant differences were observed between emotional responding to negatively-valenced sentences in both directions, the trend observed within the descriptive statistics shows a slightly greater emotional responding in the L2-L1 compared to L1-L2 translation direction, which suggests that participants were more affected by experimental stimuli while interpreting from their non-native (English) into their native language (Polish). This is contrary to what we had expected, as previous research on bilingual emotional language processing (e.g., Harris, 2004; Pavlenko, 2005; Caldwell-Harris & Ayçiçeği-Dinn, 2009; Caldwell-Harris, 2014; Costa et al., 2014; Jankowiak & Korpal, 2018) has suggested an attenuated emotional responding to stimuli presented in the non-native relative to the native language. Following such an assumption, we expected a more robust skin conductance response in the process of interpreting in the L1-L2 compared to L2-L1 direction. Yet we observed a greater number of skin conductance response in the L2-L1 interpreting direction, which may indicate that emotional responding in interpreting as an inter-lingual process that requires a high degree of language co-activation is modulated by output production. In other words, interpreters might not only be affected by the material presented to them in the source language, but also by their own production of affect-laden content in the target language. In L2-L1 interpreting, they need to speak in their native tongue, which could at least partly explain elevated emotional responses observed in the data obtained in the present pilot study. Such a conclusion, however, needs to be tested in the experiment proper with a more representative sample of interpreters. In general, more research is needed in order to provide more insights into the role of interpreting directionality in emotion processing.

Alternatively, the lack of the interpreting direction effect might be interpreted in line with the language non-selective access view, according to which both languages are activated even in purely monolingual contexts (Dijkstra & van Heuven, 2002). The language non-selective access view has been supported in a number of behavioral as well as electrophysiological (EEG) experiments showing a simultaneous co-activation of both languages during lexico-semantic processing, as reflected in, for instance, shorter reaction times (RTs) and modulations in event-related potential (ERP) patterns (i.e., attenuated N400 responses) to cognate words, which share the same form and meaning across the languages and are thus faster and easier to process (e.g., Dijkstra et al., 1998; Lemhöfer et al., 2008; Comesaña et al., 2012; Peeters et al., 2013; Jankowiak & Rataj, 2017). Importantly, this co-activation of both languages is additionally modulated by the context, which impacts top-down mechanisms engaged in target language selection (Libben & Titone, 2009; Titone et al., 2011; Lijewska & Chmiel, 2015). Thus, in the present study, a high degree of co-activation of the two language systems was required from participants, as they performed a sentence interpreting task, thus constantly switching

between the two languages. Consequently, this simultaneous activation of both L1 and L2 might have masked potential effects of the interpreting direction. Furthermore, it needs to be noted that participants tested in the present study were all highly proficient in English as their second language, as a result of which their resting level states of both languages were similarly high (Dijkstra & van Heuven, 2002), therefore allowing for an equally automatic activation and selection of the target language.

Importantly, the effect of valence was found only in the SC measure, and not in the SUPIN S30 scores. This may point to potential limitations of using self-report measures in emotion studies (see Korpal & Jankowiak, 2018, for a review). In the present study, the SUPIN S30 questionnaire was triangulated with SC as a psychophysiological measure for the sake of data reliability. Unlike skin conductance, it also provided information about the valence of emotions experienced by study participants. This notwithstanding, using self-report measures to study emotion may be problematic due to social desirability bias triggered by "the desire of respondents to avoid embarrassment and project a favorable image to others" (Fisher, 1993: 303). Some participants may not be willing to share their current emotional states, which, in turn, confounds the results obtained in a study. Besides social desirability bias, some participants might not be aware of the emotions experienced at a given point in time, or may falsely label them. Furthermore, the fact that the instrument was administered as many as five times throughout the course of the experiment might have led to a repetition effect that attenuated the questionnaire's sensitivity to capturing differences in affective states. All these methodological considerations, combined with the fact that data from only 5 participants were analysed in this pilot study, may at least partly explain the lack of statistically significant difference between self-reported current emotional states in response to negatively-valenced vs. neutral stimuli.

As reported above, in the present pilot study, only negatively-valenced stimuli were tested. Thus, the study could be further extended to include positively-laden material, which would provide even more insights into the role of stimuli valence in the process of emotional language interpreting. What is more, our experimental design could also be tested on another interpreting mode (i.e., consecutive interpreting) and other language pairs. This could help us verify whether the observed mechanisms are rather language-specific or more universal. This research could also be extended to discuss the relationship between emotional experience and interpreting quality. Such a study would in turn show whether emotional responding (reflected in SC and self-report results) modulates interpreting accuracy. Finally, in this study we look at emotion from the perspective of physiological arousal (SC), cognitive appraisal (self-reported states), and bilingual emotional language processing. Further research could include the notion of emotion regulation more specifically in order to examine how interpreters express and manage their emotional states (for a detailed discussion of emotion regulation, please refer to Suri et al., 2013).

The present experiment aimed to test the effect of interpreting directionality on emotion processing in interpreting. This pilot study is a step towards filling the gap in research on psychophysiology of interpreting, as it examined the role of interpreting directionality in emotional language processing. We observed a more pronounced emotional response, as reflected in SC results, in the process of interpreting a negatively-valenced compared to neutral content, regardless of interpreting direction. In this pilot study, we aimed to study interpreting direction and stimuli valence as factors that may modulate emotional content processing among interpreters. Further research on psycho-affective aspects of interpreting can turn out to be valuable in applied research to formulate recommendations for interpreters, who may experience intense emotions and are at an elevated risk of chronic stress and occupational burnout. Additionally, such research can be further used in interpreter training—we believe that interpreting trainees should be instructed on how to deal with affect-laden materials. This, in turn, may boost the quality of services offered by interpreters. We believe that the research questions that were addressed in our study, and which will be further investigated in the experiment proper, can have significant implications for the well-being of interpreters, whose role is to enable communication at the international level.

5. References

Bartłomiejczyk, Magdalena, 2006: "Strategies of simultaneous interpreting and directionality", *Interpreting* 8 (2), 149-174.

Bloom, Louis, and Richard Beckwith, 1989: "Talking with feeling: Integrating affective and linguistic expression in early language development", *Cognition and Emotion* 3, 315-342.

Bontempo, Karen, and Jemina Napier, 2011: "Evaluating emotional stability as a predictor of interpreter competence and aptitude for interpreting", *Interpreting* 13 (1), 85-105.

Brisau, André, Rita Godijns, and Chris Meuleman, 1994: "Towards a psycholinguistic profile of the interpreter", *Meta: Translators' Journal* 39 (1), 87-94.

Brzozowski, Piotr, 2010: *Skala Uczuć Pozytywnych i Negatywnych (SUPIN). Polska Adaptacja Skali PANAS Davida Watsona i Lee Anny Clark. Podręcznik* [SUPIN – Polish Adaptation of PANAS – Positive and Negative Affect Schedule by David Watson & Lee Anna Clark. A Manual], Warsaw: Pracownia Testów Psychologicznych.

Caldwell-Harris, Catherine L., 2014: "Emotionality differences between a native and foreign language: Theoretical implications", *Frontiers in Psychology* 5, 1-4.

Caldwell-Harris, Catherine L., and Ayşe Ayçiçeği-Dinn, 2009: "Emotion and lying in a non-native language", *International Journal of Psychophysiology* 71 (3), 193-204.

Chabasse, Catherine, and Stephanie Kader, 2014: "Putting interpreting admissions exams to the test: The MA KD Germersheim Project", *Interpreting* 16 (1), 19-33.

Comesaña, Montserrat, Rosa Sánchez-Casas, Ana Paula Soares, Ana P. Pinheiro, Andreia Rauber, Sofia Frade, and Isabel Fraga, 2012: "The interplay of phonology and orthography in visual cognate word recognition: An ERP study", *Neuroscience Letters* 529 (1), 75-79.

Costa, Albert, Alice Foucart, Sayuri Hayakawa, Melina Aparici, Jose Apesteguia, Joy Heafner, and Boaz Keysar, 2014: "Your morals depend on language", *PloS ONE* 9 (4), 1-7.

De Bot, Kees, 2000: "Simultaneous interpreting as language production" in Birgitta Englund Dimitrova, and Kenneth Hyltenstam (eds.): *Language Processing and Simultaneous Interpreting: Interdisciplinary Perspectives*, Amsterdam/Philadelphia: John Benjamins, 65-88.

Degner, Juliane, Cveta Doycheva, and Dirk Wentura, 2012: "It matters how much you talk: On the automaticity of affective connotations of first and second language words", *Bilingualism: Language and Cognition* 15 (1), 181-189.

Dewaele, Jean-Marc, 2010: *Emotions in Multiple Languages*, London: Palgrave Macmillan.

Dijkstra, Ton, and Walter J. B. van Heuven, 2002: "The architecture of the bilingual word recognition system: From identification to decision", *Bilingualism: Language and Cognition* 5, 175-197.

Dijkstra, Ton, Henk van Jaarsveld, and Sjoerd Ten Brinke, 1998: "Interlingual homograph recognition: Effects of task demands and language intermixing", *Bilingualism: Language and Cognition* 1 (1), 51-66.

Fisher, Robert J., 1993: "Social desirability bias and the validity of indirect questioning", *Journal of Consumer Research* 20 (2), 303-315.

Green, David W., 1998: "Mental control of the bilingual lexico-semantic system", *Bilingualism: Language and Cognition* 1 (2), 67-81.

Harris, Catherine L., 2004: "Bilingual speakers in the lab: Psychophysiological measures of emotional reactivity", *Journal of Multilingual and Multicultural Development* 25 (2-3), 223-247.

Hyönä, Jukka, Jorma Tommola, and Anna-Mari Alaja, 1995: "Pupil dilation as a measure of processing load in simultaneous interpretation and other language tasks", *Quarterly Journal of Experimental Psychology* 48 (3), 598-612.

Jankowiak, Katarzyna, and Karolina Rataj, 2017: "The N400 as a window into lexico-semantic processing in bilingualism", *Poznań Studies in Contemporary Linguistics* 53 (1), 119-156.

Jankowiak, Katarzyna, and Paweł Korpal, 2018: "On modality effects in bilingual emotional language processing: Evidence from galvanic skin response", *Journal of Psycholinguistic Research* 47, 663-677.

Korpal, Paweł, and Katarzyna Jankowiak, 2018: "Physiological and self-report measures in emotion studies: Methodological considerations", *Polish Psychological Bulletin* 49 (4), 475-481.

Korpal, Paweł, and Aleksandra Jasielska, 2019: "Investigating interpreters' empathy: Are emotions in simultaneous interpreting contagious?", *Target* 31 (1), 2-24.

Kurz, Ingrid, 1994: "A look into the 'black box' – EEG probability mapping during mental simultaneous interpreting" in Mary Snell-Hornby, Franz Pöchhacker, and Klaus Kaindl (eds.): *Translation Studies: An Interdiscipline*, Amsterdam/Philadelphia: John Benjamins, 199-207.

Kurz, Ingrid, and Birgit Färber, 2003: "Anticipation in German-English simultaneous interpreting", *Forum* 1 (2), 123-150.

Lemhöfer, Kristin, Ton Dijkstra, Herbert Schriefers, R. Harald Baayen, Jonathan Grainger, and Pienie Zwitserlood, 2008: "Native language influences on word recognition in a second language: A megastudy", *Journal of Experimental Psychology: Learning, Memory, and Cognition* 34 (1), 12-31.

Libben, Maya R., and Debra A. Titone, 2009: "Bilingual lexical access in context: Evidence from eye movements during reading", *Journal of Experimental Psychology: Learning, Memory, and Cognition* 35 (2), 381-390.

Lijewska, Agnieszka, and Agnieszka Chmiel, 2015: "Cognate facilitation in sentence context – translation production by interpreting trainees and non-interpreting trilinguals", *International Journal of Multilingualism* 12 (3), 358-375.

Moser-Mercer, Barbara, 2005: "Remote interpreting: The crucial role of presence", *Bulletin VALS-ASLA (Swiss Association of Applied Linguistics)* 81, 73-97.

Obler, Loraine K., 2012: "Conference interpreting as extreme language use", *International Journal of Bilingualism* 16 (2), 177-182.

Pavlenko, Aneta, 2005: *Emotions and Multilingualism*, Cambridge: Cambridge University Press.

Peeters, David, Ton Dijkstra, and Jonathan Grainger, 2013: "The representation and processing of identical cognates by late bilinguals: RT and ERP effects", *Journal of Memory and Language* 68 (4), 315-332.

Pöchhacker, Franz, 2011: "Assessing aptitude for interpreting: The SynCloze test", *Interpreting* 13 (1), 106-120.

Rojo, Ana M., 2017: "The role of emotions" in John W. Schweiter and Aline Ferreira (eds.): *Handbook of Translation and Cognition*, Hoboken: John Wiley & Sons, 369-385.

Rosiers, Alexandra, June Eyckmans, and Daniel Bauwens, 2011: "A story of attitudes and aptitudes? Investigating individual difference variables within the context of interpreting", *Interpreting* 13 (1), 53-69.

Schachter, Stanley, and Jerome E. Singer, 1962: "Cognitive, social and physiological determinants of emotional state", *Psychological Review* 69 (5), 379-399.

Schweda Nicholson, Nancy, 2005: "Personality characteristics of interpreter trainees: The Myers-Briggs Type Indicator (MBTI)", *The Interpreters' Newsletter* 13, 109-142.

Suri, Gaurav, Gal Sheppes, and James J. Gross, 2013: "Emotion regulation and cognition" in Michael D. Robinson, Edward R. Watkins, and Eddie Harmon-Jones (eds.): *Handbook of Cognition and Emotion*, New York: The Guilford Press, 195-209.

Szuki, Atsuko, 1988: "Aptitudes of translators and interpreters", *Meta: Translators' Journal* 33 (1), 108-114.

Timarová, Šarka, and Harry Ungoed-Thomas, 2008: "Admission testing for interpreting courses", *The Interpreter and Translator Trainer* 2 (1), 29-46.

Titone, Debra A., Maya Libben, Julie Mercier, Veronica Whitford, and Irina Pivneva, 2011: "Bilingual lexical access during L1 sentence reading: The effects of L2 knowledge, semantic constraint, and L1–L2 intermixing", *Journal of Experimental Psychology: Learning, Memory, and Cognition* 37 (6), 1412-1431.

Tommola, Jorma, and Marketta Helevä, 1998: "Language direction and source text complexity: Effects on trainee performance in simultaneous interpreting" in Lynne Bowker, Michael Cronin, Dorothy Kenny, and Jennifer Pearson (eds.): *Unity in diversity? Current trends in Translation Studies*, Manchester: St. Jerome, 177-186.

Watson, David, Lee Anna Clark, and Auke Tellegen, 1988: "Development and validation of brief measures of positive and negative affect: The PANAS Scales", *Journal of Personality and Social Psychology* 54, 1063-1070.