

Distinct Social Behavioral Changes in Frontotemporal Dementia and Early Onset Alzheimer's Disease

Joseph Barsuglia PhD¹, Michelle Mather^{1,2,4}, Hemali Panchal¹, Aditi Joshi^{1,2},
Robin J. Barrows^{1,4}, Elvira Jimenez^{1,2,4}, Mario F. Mendez^{1,2,3,4,5}

Departments of Neurology¹, Psychiatry & Biobehavioral Sciences², Medicine³, David Geffen University of California at Los Angeles;
Section of Neurology,⁴ Geriatric Research Education and Clinical Centers⁵, V.A. Greater Los Angeles Healthcare Center, California; Loma Linda University, Department of Psychology⁶



Introduction

Frontotemporal dementia and Alzheimer's disease are the most common neurodegenerative dementias of early-onset (< 65 years of age) (Mendez, Joshi, Tassniyom, Teng, and Shapira, 2013). However, bvFTD is frequently misdiagnosed, due to patients often failing to meet criteria for initial diagnosis or conversely, sharing overlapping symptoms with similar disorders.

Social behavioral changes characterize behavioral variant frontotemporal dementia (bvFTD); however, social behavioral changes may also occur in early-onset Alzheimer's (EOAD) disease although these changes are less understood in EOAD (Rascovsky et al., 2011).

The identification of clinical areas of overlap and divergence in pathologic social behaviors in bvFTD and EOAD can aid in the early diagnosis and treatment of these devastating dementias that strike at a relatively young age. Thus, the current study evaluated differences using a family-caregiver rating scale of atypical social behaviors in bvFTD and EOAD.

Method

Participants: Sixteen patients with bvFTD and 18 with EOAD, diagnosed according to consensus criteria (Rascovsky et al., 2011) were matched in age and cognitive severity and characterized with baseline cognitive and neuroimaging measures.

Procedure: Each patient was rated by a family-caregiver on a 40-item scale of social behaviors, the Socioemotional Dysfunction Scale (SDS). Each item is on a 5-point scale (1-to-5) from 1 = Very Inaccurate to 5 = Very Accurate. The items are summed yielding a total raw score with higher scores suggestive of greater social dysfunction. Scores range from a low score of 40 to a maximum score of 200. Responses between "1-Very Inaccurate" to "3 - Neither Accurate/Nor Inaccurate" were coded as symptom absent and items from "4 - Somewhat Accurate" to "5 - Very Accurate" were coded as a symptom present. Caregivers also completed a measure of psychiatric symptoms (Neuropsychiatric Inventory, NPI-Q).

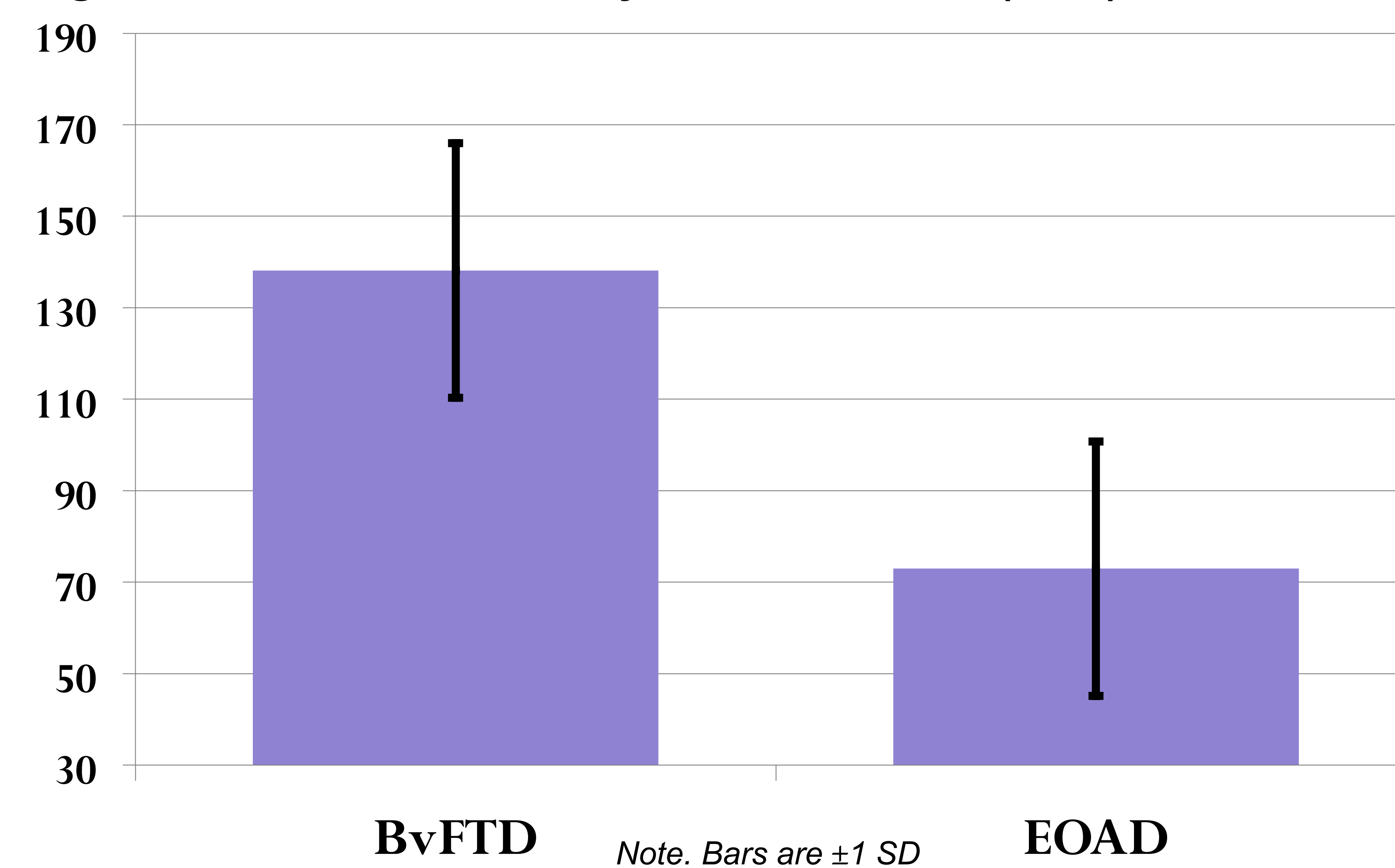
Table 1. Participant and Caregiver-Informants Demographics

	BvFTD (n=16)	EOAD (n=18)	p value
<i>Participants</i>			
Age (years)	61.06 (±10.6)	59.2 (±5.0)	.50
Gender (males/females)*	8M / 8F	6M / 12F	.32
Est. age of onset (years)	57.1 (±10.2)	55.2 (±6.2)	.51
Education (years)	15.6 (±2.3)	16.2 (±2.3)	.44
Wechsler WTAR Verbal IQ (VIQ)	105.3 (±11.2)	108.0 (±11.6)	.58
MMSE (raw)	24.6 (±4.3)	24.4 (±4.6)	.94
<i>Caregivers-Informants</i>			
Age (years)	59.6 (±14.5)	61.7 (±13.4)	.67
Gender (males/females)*	7M / 9F	9M / 9F	.72
Education (years)	16.1 (±2.1)	16.3 (±1.9)	.84

Note. *Chi-square used for gender

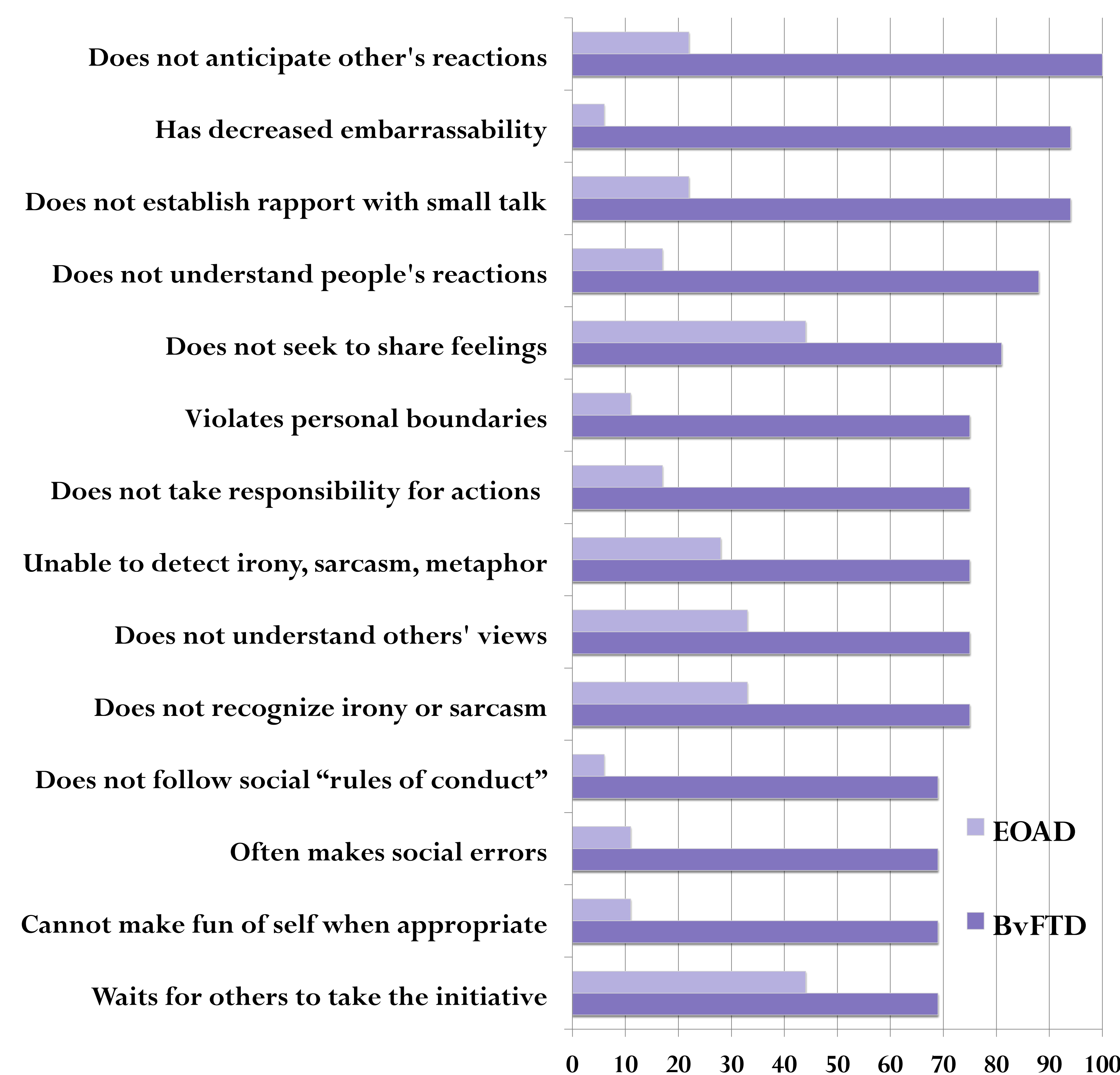
Results

Figure 1. Socioemotional Dysfunction Scale (SDS) Mean Scores



As expected, the bvFTD sample exhibited greater social behavioral symptoms on the SDS compared to the EOAD group $t(32) = 6.32$, $p < .001$. The most frequently endorsed SDS items are listed in Table 2.

Table 2. Percentage of Diagnostic Group Endorsed SDS Items



Note. All differences between groups at $p < .02$ in Chi-square. EOAD; n = 18, BvFTD, n = 16

Results

The most commonly endorsed social behaviors in each group were:

BvFTD

- Failure to anticipate others' reactions (100% of group, $n = 16$)
- Decreased embarrassability (94%)
- Does not establish rapport with small talk (94%)
- Does not understand people's reactions (88%)

EOAD

- Does not seek to share feelings (40% of group, $n = 18$)
- Waits for others to take initiative (40%)
- Does not understand others' views (30%)
- Unable to detect irony, sarcasm, or metaphor (30%)

Greater social dysfunction (higher SDS) was associated with increased neuropsychiatric symptoms (NPI-Q, symptom frequency times severity) in each group as follows (correlations $> r = .50$):

BvFTD

- disinhibition ($r = .72$, $p = .002$)
- elation/euphoria ($r = .58$, $p = .03$)
- aberrant motor behavior ($r = .55$, $p = .03$)

EOAD

- irritability ($r = .67$, $p = .002$)
- agitation ($r = .57$, $p = .01$)
- apathy ($r = .54$, $p = .02$)

Conclusion

This study identified characteristics of social disturbances in EOAD and BvFTD utilizing the Socioemotional Dysfunction Scale (SDS). Social behavioral changes occurred in EOAD, and to a greater extent in bvFTD as expected. However, this study is one of the first to help characterize the type and prevalence of social disturbances in a small EOAD group. Socioemotional behaviors were most associated with disinhibition, euphoria, and motor behaviors in bvFTD, and irritability, agitation, and apathy in EOAD. Social behaviors are associated with distinct clusters of neuropsychiatric symptoms between dementias which may reflect their divergent neuropathological substrates. These findings, along with further analysis, can clarify the relationship of distinct social behavioral changes in these dementia syndromes.

References

- Mendez, M. F., Joshi, A., Tassniyom, K., Teng, E., & Shapira, J. S. (2013). Clinicopathologic differences among patients with behavioral variant frontotemporal dementia. *Neurology*, 80(6), 561-568.
- Rascovsky, K., Hodges, J. R., Knopman, D., Mendez, M. F., Kramer, J. H., Neuhaus, J., . . . Miller, B. L. (2011). Sensitivity of revised diagnostic criteria for the behavioural variant of frontotemporal dementia. *Brain*, 134(Pt 9), 2456-2477.
- Barsuglia, J. P., Kaiser, N. C., Wilkins, S. S., Joshi, A., Barrows, R. J., Paholpak, P., . . . Mendez, M. F. (2014). A Scale of Socioemotional Dysfunction in Frontotemporal Dementia. *Archives of Clinical Neuropsychology*, In Press.

Acknowledgement

FUNDING: This work was supported by VA GRECC Advanced Fellowship in Geriatrics – J. Barsuglia, grant NIA #R01AG034499-03.