Gambling Behavior and Problems Among Older Adults: A Systematic Review of Empirical Studies

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Objectives. With the rapid aging of the population and the increased availability of gambling facilities over the past three decades, older adults may gamble more and may be increasingly at risk for problem gambling (PG) or pathological gambling disorder (PGD). To facilitate a better understanding of gambling behavior among older adults that will inform preventive strategies, this article systematically examined empirical studies on issues related to older adults’ gambling.

Method. This article reviewed 75 empirical studies including data on the distribution and determinants of PG and PGD and the outcomes of gambling.

Results. This review used the broad term of “disordered gambling” as a means to explain a continuum of problems caused by PG and PGD. The analyses covered seven topics concerning older adults’ gambling behaviors: Participation rates for gambling, prevalence rates of disordered gambling, motivation for initially beginning to gamble, risk and protective factors for disordered gambling, and negative and positive health outcomes from gambling.

Discussion. Based on research gaps identified in the review, this article proposes six recommendations for future studies focusing on well-being of older adults who gamble, research method issues, and taking into account older adults’ inspirations and adjustment to the aging process in the 21st century.

Key Words: Activity levels—Behavioral addiction—Lifestyle—Mental health.
articles have reviewed the literature in the field of older adult gambling (Lucke & Wallace, 2006; McKay, 2005; McVey, 2003; Stewart & Oslin, 2001; Tirachaimongkol, Jackson, & Tomnay, 2010). One review focused on addictions in general in the older adult population (Stewart & Oslin, 2001), and three others focused on gambling addictions in older adults in particular (Lucke & Wallace, 2006; McKay, 2005; Tirachaimongkol et al., 2010). Notably, only one study (McVey, 2003) was in fact a systematic review; however, it was primarily based on gambling studies of the general population because the number of studies particularly focusing on older adults was limited at that time.

Participation in gambling should be considered as a continuous variable. “More specifically, people’s gambling behavior can range from none to a great deal. At many points along this continuum, people can experience problems associated with their gambling, though these difficulties tend to emerge more among frequent gamblers who wager at higher levels. The point of demarcation between moderate and severe problems and addiction is somewhat arbitrary” (Korn & Shaffer, 1999, p. 308). Nevertheless, according to the most recent Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) (American Psychiatric Association, 2000), pathological gambling disorder (PGD) is defined as a condition in which an individual exhibits five or more DSM-IV-TR diagnostic criteria such as showing persistent and recurrent maladaptive gambling behavior, resulting in impairments in the areas of work, studies, and social and family relationships (American Psychiatric Association, 2000). Problem gambling (PG) is characterized by having difficulties in limiting money or time spent on gambling, which results in adverse consequences for individual players, their families, and those around them. Furthermore, PG also refers to typically between three and four PGD criteria but does not meet the diagnostic threshold for a PGD (Volberg, Nyssse-Carris, & Gerstein, 2006). In some situations, individuals who exhibit only one or two diagnostic criteria are defined as “at risk” gamblers given their exposure to gambling and their vulnerability for excessive gambling (Volberg et al., 2006). Generally, the broader “disordered gambling” term refers to the combination of PG and PGD. The present review uses the broad term of “disordered gambling” as a means to explain a continuum of psychosocial problems caused by excessive gambling including the PG and PGD.

To facilitate a better understanding of older adults’ gambling behavior that could inform health promotion efforts, this study aims to systematically examine empirical studies on issues related to gambling among older adults. Based on our critical review of older adult gambling literature, the authors summarize empirical evidence on the distributions, determinants, and health consequences of gambling and review theoretical approaches. The study is concluded by identifying gaps in the current studies to inform future research that may facilitate the development of better strategies to protect older adults from PG and PGD.

**Method**

**Scope and Inclusion Criteria of Gambling Studies in This Review**

Gambling behavior can be examined from multiple perspectives including demographics, economics, marketing, morality, addictions, mental health, public health, and policy (McVey, 2003). Due to this study’s focus on health and well-being for older adults, the authors restricted the search to the PubMed/Medline and PsycInfo databases from January 1996 to December 2010, with terms (gambling OR gamblers) AND (older OR elder* OR senior* OR geriatric OR later life OR late life) in the title, abstract, or keywords. The inclusion criteria included original studies on issues related to gambling among older adults published in English. The present authors interpreted the topic of “older adults and gambling” broadly because the purpose of this review is to cover the spectrum of gambling activities among older adults. Thus, the authors included gambling studies with samples aged 50 years and older and included any form of gambling such as casino games, bingo, lotteries, betting on sports, or in mahjong houses. Literature searches located 134 references in the PubMed/Medline database and 199 references in the PsycInfo database. In total, 271 references (66 references overlapped between the two databases) were retrieved; of these, 209 references were excluded because the studies were not related to gambling, were not focused on older adults, were not related to health outcomes, were not original studies, or were not published in English. Sixty-two references met the inclusion criteria, including 57 peer-reviewed articles and 5 unpublished dissertations (Jadlos, 2003; Langewisch, 2005; Phillips, 2009; Wiebe, 2002; Winslow, 2002). Of all 62 studies, 23 focused on social or recreational gambling, 29 focused on PG or PGD, 3 examined gambling activities among older adults from a policy perspective (Bjelde et al., 2008; Higgins, 2001, 2005), and 7 employed gambling as a theoretical mechanism to examine decision-making ability among older adults (Boggio et al., 2010; Denburg, Recknor, Bechara, & Tranel, 2006; Denburg, Tranel, & Bechara, 2005; Denburg et al., 2009; Fein, McGilivray, & Finn, 2007; Isella et al., 2008; Wood, Busemeyer, Koling, Cox, & Davis, 2005). Most of the included studies were quantitative studies; only five were qualitative research (Bjelde et al., 2008; Higgins, 2001; McNeilly & Burke, 2002; Parekh & Morano, 2009; Quandt, Grueninger, & Wimmer, 2009) and one was a case study (Higgins, 2005).

**Additional Searches**

In addition, reference lists of all located articles were reviewed, and nine additional articles (Abbott & Volberg, 2000; Abbott, Volberg, & Ronnberg, 2004; Desai, Desai, & Potenza, 2007; Gullickson & Hartman, 1997; Gullickson, Hartmann, & Wiersma, 1999; Volberg & McNeilly, 2003; Welte, Barnes, Wieczorek, Tidwell, & Parker, 2001, 2002;
Wong, McAuslan, & Bray, 2000) that report the estimated rates of social gambling or disordered gambling among older adults were identified and included. Google Scholar was also used as a search tool for relevant literature or reports in recent years because literature around or before the year 2000 had been reviewed elsewhere (McVey, 2003). As a result, four additional surveys (Boreham, Laffan, Johnston, Southwell, & Tighe, 2006; Moore, 2001; Rönnberg et al., 1999; Volberg et al., 2006) and one problem gambling prevention manual (Lemay, Bakich, & Fontaine, 2006) that focused on older adults were identified and included. Figure 1 summarizes the above literature search process.

Results
Most of the included studies were conducted in the United States and Canada with a few conducted in New Zealand (e.g., Abbott & Volberg, 2000), Australia (e.g., Nower & Blaszczynski, 2008), and Sweden (Rönnberg et al., 1999) (see Table 1). Most studies were conducted with Western samples, and some epidemiological surveys were conducted with a representative sample that included multiple ethnic groups. Only four studies particularly focused on older adults from diverse racial/ethnic groups, including African Americans (Bazargan, Bazargan, & Akanda, 2001; Christensen & Patsdaughter, 2004), and ethnic Chinese in Canada (Lai, 2006; Zheng, Walker, & Blaszczynski, 2010).

Based on the findings from these studies, the present authors synthesized and reframed the knowledge into seven categories in relation to gambling among older adults as further discussed below: (a) participation rates for gambling, (b) prevalence rates of disordered gambling, (c) motivation for initially beginning to gamble, (d) risk factors for disordered gambling, (e) protective factors for disordered gambling, (f) negative health outcomes from gambling, and (g) positive health outcomes from gambling.

Participation Rates of Gambling
Public attitudes about gambling have changed greatly over the past decades. During the first half of the 20th century, gambling was considered a sin or a vice (McNeilly & Burke, 2000). More currently, older adults generally possess positive attitudes toward participating in gambling activities (Martin et al., 2010) and consider gambling to be a normative and harmless form of entertainment (Hagen,
and a relatively new social outlet (Hagen et al., 2005; Hope & Havir, 2002; McNeilly & Burke, 2000, 2001, 2002; Preston, Shapiro, & Keene, 2007; Zaranek & Chapleski, 2005). However, nearly all of these studies were conducted in the context of Western culture and in developed regions of the world. It is still unclear whether attitudes toward gambling among older adults have changed in other cultures or countries.

Nineteen separate studies have reported the participation rates of gambling among older adults (Table 1). Three studies were conducted with a sample recruited from gambling sites, senior centers, or primary-care clinics (Bazargan et al., 2001; Ladd, Molina, Kerins, & Petry, 2003; Levens, Dyer, Zubritsky, Knott, & Oslin, 2005). The remaining studies were conducted with samples recruited from communities. None of the studies assess changes in participation over time except two investigations that used longitudinal data sets to perform the analyses (Martin et al., 2010; Vander Bilt, Dodge, Pandav, Shaffer, & Ganguli, 2004). Based on a prospective epidemiological study, Vander Bilt and associates (2004) found that being between 70 and 79 years old, being male, having more social support, using alcohol, and having previously gambled predicted future participation in gambling activity. On the other hand, Martin and colleagues (2010) showed that 25.5% of the research participants reported gambling monthly or more at initial survey with a decline to 16.9% reported at 2-year follow-up study. The older adults gambling participation rates for the prior year ranged from 26.6% (Lai, 2006) to 85.6% (Rönnberg et al., 1999), and the lifetime participation rate ranged from 28.7% (Pietrzak, Morasco, Blanco, Grant, & Petry, 2007) to 100% (Ladd et al., 2003). This disparity in both current and lifetime participation rates may be attributed to differences in sampling, regions surveyed, and variation in the definitions of “older adult,” the type of gambling investigated, and the definition of gambling.

Several studies have compared participation rates between older adults and other age groups (Abbott et al., 2004; Desai et al., 2007; Desai, Maciejewski, Dausey, Caldarone, & Potenza, 2004; Stitt, Giacopassi, & Nichols, 2003; Welte et al., 2001). The results from these studies support older adult gambling participation rates that were lower than those of other age groups. In particular, recent studies revealed that “young-old” adults (e.g. about 60 years old) were more likely to visit a casino (Zaranek & Chapleski, 2005) or to participate in gambling (Vander Bilt et al., 2004) than “older-old” adults (i.e., about 65 years or older).

Multiple studies compared older adults’ participation in various gambling types. For example, McVey’s (2003) study of older adults in Iowa found that playing the slot machines was the most popular gambling activity. McNeilly and Burke’s (2001) study in Nebraska found that bingo was the most popular social activity at senior clubs and casino gambling was the most popular day-trip social activity for active older adults. Other studies indicated that the lottery was the most popular form of gambling followed by casino gambling (Martin et al., 2010; Welte et al., 2002), whereas Mahjong was a popular form of gambling in Chinese communities all over the world (Zheng et al., 2010).

Studies also indicate that gambling patterns of older adults differ from those of younger adults (Desai et al., 2004). Older recreational gamblers were less likely to gamble to win money or to escape from boredom than younger gamblers (Desai et al., 2004). McNeilly and Burke (2000) reported that older adults usually withdrew from multiple types of gambling and concentrated on more limited types of gambling activity, in contrast to younger adults who tended to gamble on several different games. Other studies reported that older gamblers were the least likely to engage in other recreational activities besides gambling, unlike younger adults who participated in multiple activities (Moufakkir, 2006; Zaranek & Chapleski, 2005). Evidence from the Iowa gambling task force suggested a difference in the decision-making strategies of younger and older adults (Fein et al., 2007; Wood et al., 2005). One study found that older adults, in comparison to younger adults, were more likely to make decisions that could result in long-term negative financial consequences (Fein et al., 2007). Among older adults, studies also suggested a gender difference in gambling patterns (McVey, 2003), with women preferring bingo and men preferring card games (Cousins & Witcher, 2004; McVey, 2003).

Prevalence Rates of Problem Gambling and PGD

Table 1 shows the prevalence rates of PG and PGD among older adults that were extracted from the empirical studies. The reported prevalence rates of lifetime PG ranged from 0.2% (Rönnberg et al., 1999) to 12.9% (Ladd et al., 2003). Similarly, the estimated rates of current PG (past 12 month) among older adults ranged from 0.3% (Abbott & Volberg, 2000; Desai et al., 2007) to 10.4% (Zaranek & Chapleski, 2005). The wide range in prevalence rates may be explained by the sheer fact that some surveys were conducted among general populations (including participants who self-reported having never gambled) versus only those individuals who have gambled before (excluding nongamblers).

The prevalence rates of lifetime PGD ranged from 0.3% (Abbott & Volberg, 2000) to 2.4% (Preston et al., 2007). For current PGD, these prevalence rates ranged from 0.3% (Moore, 2001) to 2.7% (McNeilly & Burke, 2000) for older adults sampled from communities, to 3.8% (Erickson, Molina, Ladd, Pietrzak, & Petry, 2005) for older adults in senior centers, and a high of 11% (McNeilly & Burke, 2000) for older adults sampled from gambling venues. In addition, one study reported that the estimated rate of at risk gambling among older adults was as high as 17% (Bazargan et al., 2001).

The great variability in the prevalence rates of PGD may be attributed to differences in sampling, locations or...
<table>
<thead>
<tr>
<th>Study</th>
<th>Country (region)</th>
<th>N</th>
<th>Age Sampling</th>
<th>Types of gambling</th>
<th>% of participation in gambling</th>
<th>% of problem gambling</th>
<th>% of pathological gambling</th>
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<tbody>
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<td></td>
<td></td>
<td>Past-year</td>
<td>Lifetime</td>
<td>Past-year</td>
</tr>
<tr>
<td>Hong et al., 2009</td>
<td>USA</td>
<td>489</td>
<td>50+ Subgroup of a nationally representative sample of general population</td>
<td>Casino, lottery</td>
<td>—</td>
<td>—</td>
<td>8.4%*</td>
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<td></td>
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<td>(Measure: DSM-IV)</td>
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<tr>
<td>Zaranek &amp; Chapleski, 2005</td>
<td>USA (Detroit)</td>
<td>1,410</td>
<td>60+ A random sample of senior residents</td>
<td>Casino</td>
<td>—</td>
<td>—</td>
<td>—</td>
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<td></td>
<td>(Measure: 2 single questions)</td>
<td></td>
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<tr>
<td>Desai et al., 2007</td>
<td>USA</td>
<td>8,205</td>
<td>65+ Subgroup of a nationally representative sample of noninstitutionalized U.S. residents</td>
<td>n.r.</td>
<td>28.7%</td>
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<td></td>
<td>(30.8% for all aged 40+)</td>
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</tr>
<tr>
<td>Pietrzak et al., 2007</td>
<td>USA</td>
<td>10,563</td>
<td>60+ A nationally representative sample of noninstitutionalized older adults</td>
<td>n.r.</td>
<td>—</td>
<td>28.74%</td>
<td>—</td>
</tr>
<tr>
<td>Presten et al., 2007</td>
<td>USA (Las Vegas)</td>
<td>449</td>
<td>55+ A random sample of senior residents</td>
<td>Multiform</td>
<td>79%</td>
<td>74%</td>
<td>2.0%</td>
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<td></td>
<td></td>
<td>(Measure: NODS)</td>
<td></td>
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<tr>
<td>Philippe &amp; Vallerand, 2007</td>
<td>Canada (Montreal)</td>
<td>810</td>
<td>55+ Stratified sample in randomly selected communities</td>
<td>n.r.</td>
<td>47.5%</td>
<td>—</td>
<td>1.6%</td>
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<td></td>
<td>(Measure: SOGS-R)</td>
<td></td>
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<tr>
<td>Lai, 2006</td>
<td>Canada</td>
<td>2,272</td>
<td>55+ A random sample of older Chinese in Canada, selected with telephone numbers</td>
<td>Multiform</td>
<td>26.6%</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>(multicities)</td>
<td></td>
<td></td>
<td></td>
<td>(Measure: SOGS)</td>
<td></td>
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<tr>
<td>Volberg et al., 2006</td>
<td>USA (California)</td>
<td>1,432</td>
<td>65+ Subgroup of a random digit-dial telephone survey of residents</td>
<td>Multiform</td>
<td>—</td>
<td>—</td>
<td>—</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(Measure: NODS)</td>
<td></td>
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<td></td>
<td>(7,121)b</td>
<td></td>
<td></td>
<td></td>
<td>(2.2%)c</td>
<td></td>
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</tr>
<tr>
<td>Erickson et al., 2005</td>
<td>USA (Connecticut)</td>
<td>343</td>
<td>60+ Convenient sample recruited from 12 senior centers, 8 bingo sites, and 3 other sites</td>
<td>n.r.</td>
<td>—</td>
<td>—</td>
<td>6.4%</td>
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<tr>
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<td></td>
<td></td>
<td></td>
<td>(Measure: SOGS)</td>
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<tr>
<td>Levens et al., 2005</td>
<td>USA (Philadelphia and Pennsylvania)</td>
<td>843</td>
<td>65+ A random sample of older adults with a scheduled primary-care clinic appointment</td>
<td>n.r.</td>
<td>69.6%</td>
<td>—</td>
<td>10.9%</td>
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<tr>
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<td></td>
<td></td>
<td></td>
<td>(Measure: Questions derived from SOGS)</td>
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<tr>
<td>Wiebe &amp; Cox, 2005</td>
<td>Canada (Manitoba)</td>
<td>1,000</td>
<td>60+ A representative random sample of senior civil servants interviewed by telephone</td>
<td>Multiform</td>
<td>74.7%</td>
<td>—</td>
<td>1.6%</td>
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<td></td>
<td></td>
<td>(Measure: SOGS-R)</td>
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</tr>
<tr>
<td>Zaranek &amp; Chapleski, 2005</td>
<td>USA (Detroit)</td>
<td>1,410</td>
<td>60+ A random sample of senior residents</td>
<td>Casino visit</td>
<td>57.8%</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Vander Bilt et al., 2004</td>
<td>USA (Pittsburgh)</td>
<td>1,016</td>
<td>65+ A representative community cohort of senior residents</td>
<td>Multiform</td>
<td>47.7%</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Christensen &amp; Patsdaughter, 2004</td>
<td>USA (Boston)</td>
<td>67</td>
<td>50+ Convenient senior community cohort of senior residents (Black Americans)</td>
<td>n.r.</td>
<td>—</td>
<td>87%</td>
<td>3.0%</td>
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<td></td>
<td></td>
<td>(Measure: MAGS)</td>
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<tr>
<td>Desai et al., 2004</td>
<td>USA</td>
<td>387</td>
<td>65+ Subgroup of a nationally representative random sample survey by telephone</td>
<td>Multiform</td>
<td>50.3%</td>
<td>—</td>
<td>0.5%</td>
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<td></td>
<td></td>
<td></td>
<td>(65.5% for those aged below 65)</td>
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<tr>
<td></td>
<td>(2,417)b</td>
<td></td>
<td></td>
<td></td>
<td>(Measure: DSM-IV)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ladd et al., 2003</td>
<td>USA (Connecticut)</td>
<td>492</td>
<td>65+ Convenient sample with 132 recruited from bingo sites and 360 from senior centers</td>
<td>Bingo</td>
<td>—</td>
<td>100%</td>
<td>—</td>
</tr>
</tbody>
</table>

*Combined problem and pathological gambling lifetime rates: 12.9% in the bingo sample, 9.7% in the senior center sample (Measure: SOGS)
Table 1. Participation and Prevalence Rates of Gambling Among Older Adults (Continued)

<table>
<thead>
<tr>
<th>Study</th>
<th>Country (region)</th>
<th>N</th>
<th>Age</th>
<th>Sampling</th>
<th>Types of gambling</th>
<th>% of participation in gambling</th>
<th>% of problem gambling</th>
<th>% of pathological gambling</th>
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<td></td>
<td></td>
<td>% of participation in gambling</td>
<td>% of problem gambling</td>
<td>% of pathological gambling</td>
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<td></td>
<td></td>
<td>Past-year</td>
<td>Lifetime</td>
<td>Past-year</td>
</tr>
<tr>
<td>Stitt et al., 2003</td>
<td>USA (Multicities)</td>
<td>677</td>
<td>63+</td>
<td>A subgroup of a sample selected from multiple communities in different cities</td>
<td>Casino</td>
<td>39.6% (47.2% for those under age 65)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Volberg &amp; McNeilly, 2003</td>
<td>USA (Florida)</td>
<td>1,260</td>
<td>55+</td>
<td>Random sample interviewed with telephone</td>
<td>Multiform</td>
<td>69% (82%)</td>
<td>—</td>
<td>0.7% (Measure: SOGS)</td>
</tr>
<tr>
<td>Wehe et al., 2002</td>
<td>USA</td>
<td>509</td>
<td>61+</td>
<td>Subgroup of a nationally representative random sample survey by telephone</td>
<td>Multiform</td>
<td>36% (82%)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Bazargan et al., 2001</td>
<td>USA (Los Angeles)</td>
<td>80</td>
<td>60+</td>
<td>A cohort of African Americans selected from two senior citizen centers</td>
<td>n.r.</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>McNeill &amp; Burke, 2001</td>
<td>USA (Nebraska)</td>
<td>6,957</td>
<td>65+</td>
<td>Senior citizens from all organizations in the area</td>
<td>Bingo, Casino</td>
<td>23% played bingo more than 4 times a month</td>
<td>16% visited casino more than once</td>
<td>—</td>
</tr>
<tr>
<td>Moore, 2001</td>
<td>USA (Oregon)</td>
<td>1,512</td>
<td>62+</td>
<td>A random sample of senior residents</td>
<td>Multiform</td>
<td>58% (75%)</td>
<td>0.9% (Measure: SOGS)</td>
<td>3.4% (Measure: SOGS)</td>
</tr>
<tr>
<td>Wehe et al., 2001</td>
<td>USA</td>
<td>511</td>
<td>61+</td>
<td>Subgroup of a randomized national telephone survey</td>
<td>n.r.</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Abbott &amp; Volberg, 2000</td>
<td>New Zealand</td>
<td>1,465</td>
<td>65+</td>
<td>Multiform</td>
<td>n.r.</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>McNeill &amp; Burke, 2000</td>
<td>USA (Nebraska)</td>
<td>315</td>
<td>65+</td>
<td>Random cluster sampling from gambling venues (n = 910) and senior centers or communities (n = 224)</td>
<td>Multiform</td>
<td>5.5% in gambling patron group, 13.5% in community group (Measure: SOGS-R)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Wong et al., 2000</td>
<td>USA (Detroit)</td>
<td>178</td>
<td>65+</td>
<td>Subgroup of a random sample selected from four areas in the city</td>
<td>Multiform</td>
<td>—</td>
<td>1.7% (Measure: SOGS)</td>
<td>—</td>
</tr>
<tr>
<td>Gullickson et al., 1999</td>
<td>USA (Michigan)</td>
<td>136</td>
<td>65+</td>
<td>Subgroup of a sample of residents recruited from four regions in the state</td>
<td>Multiform</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Rönnberg et al., 1999</td>
<td>Sweden</td>
<td>857</td>
<td>65+</td>
<td>Subgroup of a nationally representative sample of residents</td>
<td>Multiform</td>
<td>85.6% (88.8%)</td>
<td>n.r. (9%)</td>
<td>0.4% (1.4%)</td>
</tr>
<tr>
<td>Gullickson &amp; Hartman, 1997</td>
<td>USA (Michigan)</td>
<td>514</td>
<td>65+</td>
<td>Subgroup of a representative sample of residents in the state</td>
<td>Multiform</td>
<td>1.6%</td>
<td>—</td>
<td>3.1% (Measure: SOGS)</td>
</tr>
</tbody>
</table>

Notes. n.r. = not reported; MAGS = the Massachusetts Gambling Screen; DIS = Diagnostic Interview Schedule; NODS = NORC DSM-IV Screen for Gambling Problems.

*Country/region refers to where the sample was collected.

†Sample size of the whole sample with a wide range of ages.

‡Combined prevalence rate of problem gambling and pathological gambling.

§Prevalence rate in the whole sample.

AThis number was calculated using the percentage of older adults in the whole sample.
venues where participants were recruited, definitions of older adults, and measures of disordered gambling (Volberg, 2004). For example, in a nationally representative sample of U.S. adults (Welte et al., 2001), current PGD had an overall prevalence of 1.3% as measured by the Diagnostic Interview Schedule (Robins, Helzer, Croughan, & Ratcliff, 1981) and 1.9% as measured by the South Oaks Gambling Screen (SOGS) (Lesieur & Blume, 1987) (see Cox, Enns, & Michaud, 2004; Petry, Stinson, & Grant, 2005 for further discussion on using DSM-based screening and SOGS). As shown in Table 1, various instruments were employed to measure PG and/or PGD across studies. Of these instruments, the SOGS was the most widely used to estimate the prevalence of probable PG or PGD, but the Canadian Problem Gambling Index or the nine-item of Problem Gambling Severity Index has been used with increasing frequency by more recent studies (Ferris & Wynne, 2001; Lorains, Cowlishaw, & Thomas, 2011).

Several studies have compared the PG and PGD prevalence rates between older adults and younger adults (Abbott et al., 2004; Desai et al., 2004, 2007; Volberg et al., 2006; Welte et al., 2002). Results suggest that the prevalence rates of both current and lifetime disordered gambling among older adults were lower than those among younger adults. With respect to gender differences, the results are generally consistent, suggesting that the estimation for disordered gambling among male older adults was higher than among female older adults (Hong, Sacco, & Cunningham-Williams, 2009; Moore, 2001).

Motivation for Initially Beginning to Gamble
In a study on older adults’ casino motivation and gambling intention, Phillips (2009) identified five distinctive gambling motivation dimensions: Thrill of winning, socialization, escape, enjoyment, and curiosity. Clarke and Clarkson (2009) examined the literature and focused on three types of gambling motivation: intrinsic motivation, extrinsic motivation, and amotivation. “Intrinsic motivations” include understanding or exploration of knowledge, stimulation, excitement, or achievement of skills. “Extrinsic motivations” include material rewards, release of tension or guilt, social connection, or recognition. “Amotivation” is characterized by behavior that avoids boredom but has no real purpose. These motivations are underlying mechanisms that initiate, intensify, and maintain older adults’ participation or involvement in gambling activities (Clarke, 2008; Clarke & Clarkson, 2009). Based on this framework, the present authors identify several factors that motivate older adults to begin to gamble. However, these factors should be viewed with caution as the studies include samples from various socioeconomic strata, living environments, and cultural contexts; in addition, participating in different gambling activities and using different motivation measurements.

Older adults gamble for many reasons, such as the food served at gambling venues, the excitement, chances to give to charity, chances to have an inexpensive holiday, the need for a safe way to be “bad” (Hagen et al., 2005), and to find a quick-fix solution for financial problems (Vander Bilt et al., 2004). McVey (2003) noted additional reasons such as winning money, passing time, being with others or friends, enjoying freedom to do what one wants, and getting a break from taking care of other people. Some age-related circumstances might motivate older adults to participate in gambling such as widowhood, low annual income, isolation from society, physical disabilities and health problems that limit older adults’ daily activities (Cousins & Witcher, 2007; Southwell, Boreham, & Laffan, 2008), living in rental accommodation, receiving federal income supplements, and inner-city location (Hirshorn, Young, & Bernhard, 2007).

A desire to exercise the mind may be another potential motivator for gambling among older adults. As they reach an older age, individuals may be more likely to experience changes in cognitive performance (Boggio et al., 2010; Denburg et al., 2005, 2009). Thus, older adults may try to seek various opportunities, either consciously or unconsciously, that may improve their cognitive functioning. Cognitive stimulation and inexpensive excitement provided in a safe environment have been identified in several studies as reasons for the popularity of gambling among older adults (Hong et al., 2009; McNeilly & Burke, 2002; Southwell et al., 2008). Laditka and associates (2009) conducted a qualitative study to examine perceptions about ageing across six racial/ethnic groups (Caucasian, African American, American Indian, Chinese, Vietnamese, and Hispanic). It was found that all groups, except African Americans and Vietnamese, mentioned that engaging in some sort of cognitive activity, such as gambling, helped keep their brains active and was a sign of aging well.

McNeilly and Burke (2000) reported that older adults at gambling venues were more likely to gamble to facilitate getting away for the day (extrinsic motivation), access to inexpensive meals (extrinsic motivation), passing the time or relieving boredom (amotivation), and relaxation (intrinsim motivation). However, Martin and colleagues (2010) explored reasons for casino gambling by urban older adults residing in the community and found that individuals more frequently reported entertainment, enjoyment (intrinsim motivation) as the reasons for casino gambling rather than for financial gain (extrinsic motivation).

Risk Factors for Disordered Gambling
Although gambling is now commonly regarded as a social and recreational activity, excessive gambling or increasing accessibility of gambling opportunities may result in PG and PGD and adverse mental health consequences. A comprehensive review of empirical studies that identify risk factors related to PG and PGD suggest behavioral, psychological, PG age of onset, comorbidity, and other factors (McCready, Mann, Zhao, & Eves, 2008). Some studies considered behavioral factors related to gambling experience,
frequency, and onset (e.g., Desai et al., 2007; Hong et al., 2009; Vander Bilt et al., 2004). Two studies indicated that more frequent gambling, participation in more types of gambling, and spending more on gambling in a single session were significantly associated with PG (Clarke & Clarkson, 2009; McCready et al., 2008). A study reported that older respondents recruited at bingo sites were more likely to have experienced 9 of 13 gambling activities in their lifetimes and were more likely to bet weekly or more frequently, compared with those recruited from senior centers (Ladd et al., 2003). Other studies suggested that older adults sampled from gambling venues were more likely to have higher levels of disordered gambling than older adults sampled from communities (McNeilly & Burke, 2000; von Hippel, Ng, Abbott, Caldwell, Gill, & Powell, 2009). For example, one study indicated that visiting a casino was the largest contributor to gambling problems; older adults who visited the casino monthly or more were 2.6 times more likely than older adults who rarely or occasionally visited the casino to show evidence of a gambling problem (Zaranek & Lichtenberg, 2008). It is worth noting that no firm conclusion has been established about the cause-effect relationship between frequenting gambling venues and developing gambling problems given there are very few longitudinal studies on the topic.

A few other studies examined psychological factors associated with PG and PGD. Philippe and Vallerand (2007, p. 277) argued that passion—defined as “a strong inclination toward an activity that one likes, finds important and in which one invests time and energy”—may discriminate problematic from nonproblematic gamblers. Distinguishing between types of passion in older adults (Philippe & Vallerand, 2007; Vallerand & Houffort, 2003), they conclude that harmonious passion was lower and obsessive passion was higher for those with PG than for those at risk and without gambling problems (Philippe & Vallerand, 2007). Clarke (2008) compared older gamblers with younger gamblers on involvement, motivation, and PG and found that increased severity of PG was more likely to be associated with releasing tension than with winning money or seeking sensation. One study suggested that the decreased self-control brought about by the diminished executive functioning characteristic of aging was a possible contributor to PG among older adults (von Hippel et al., 2009).

Studies among older adults with disordered gambling indicated that a later age of onset of gambling was an important risk factor for disordered gambling (Grant, Kim, & Brown, 2001; McNeilly & Burke, 2002). A recent study of PGD confirmed that late onset of a gambling problem was associated with a higher level of psychopathology (e.g., paranoid ideation, depression) (Jimenez-Murcia et al., 2010). However, another study found that those who began to gamble at an earlier age gambled more frequently and had more severe medical and psychiatric problems, compared with gamblers who had a later onset of gambling (Burge, Pietrzak, Molina, & Petry, 2004). Furthermore, Petry (2002) compared gambling and psychosocial problems between young, middle-aged, and older treatment seekers with PGD and found that the middle-aged and older gamblers were more likely to be women than the younger gamblers. The author pointed out that older women did not begin gambling regularly until an average age of 55 years, whereas older male gamblers generally reported a lifelong history of gambling (Petry, 2002). This mixed finding raises important questions that warrant additional research, in particular using longitudinal designs: Do older adults who have a later initiation into gambling have a different trajectory of gambling problems (i.e., develop psychosocial problems more quickly or slowly) or show a different clinical symptom presentation than those older adults with an earlier gambling onset and thus more gambling experience? If the differences exist, what are the individual or sociocultural/cultural contextual factors, and the processes contributing to these different gambling trajectories and clinical presentations?

With regard to comorbidity, it was found that alcohol and substance dependence significantly increased the odds of reporting a gambling problem (McCready et al., 2008). In addition, another study reported that the predictors of at risk gambling behavior included being a binge drinker, presence of symptoms of posttraumatic stress disorder, and being of a racial/ethnic minority (Levens et al., 2005).

Other predictors of PG and PGD among older adults included lower income, having no vocational or tertiary qualifications, unemployment or retirement, single or widowed status, poor self-rated health, low level of optimism, poor quality of social support network, and limited access to the public transportation system (Lai, 2006; McVey, 2003; Vander Bilt et al., 2004, Zaranek & Chapleski, 2005; Zaranek & Lichtenberg, 2008). A recent study suggested that the risk for PG among those who considered gambling as a significant part of their recreation activities was four times higher than that of other adults (Pietrzak et al., 2007). Additionally, it appears that other predictors are man, being of younger age (60–69 years old), being motivated to gamble to experience excitement and to win money (Clarke & Clarkson, 2009; Southwell et al., 2008). Another survey among 775 older adults suggested that gambling to escape problems and loneliness and to pass the time were the predominant reasons for gambling among older adults with PG or PGD (Boreham et al., 2006; McVey, 2003; Wiebe & Cox, 2005).

Protective Factors for Disordered Gambling

In addition to motivational factors for gambling and risk factors for disordered gambling, a few studies have also documented protective factors for gambling among older adults. A study of 1,410 randomly selected older adults revealed that those who reported a higher social support network, participated in a variety of other social activities, were married, had a higher educational attainment,
and earned a higherlevel income were less likely to visit casinos compared with their counterparts (Zaranek & Chapleski, 2005). A multisite study on the patterns of gambling and associated predictors among older ethnic Chinese in Canada indicated that having a postsecondary or higher level of education and having a higher level of life satisfaction reduced the probability of gambling (Lai, 2006). McCready and colleagues (2008) also reported that being married and having a higher education level were associated with reduced risk of gambling problems. Hong and colleagues (2009) examined determinants of lifetime and current problem gambling, based on a randomly selected national sample of older adults in the United States, and found that participation in religious services was a protective factor in both lifetime and current PG.

In an exploratory qualitative study of nonproblem gambling among 12 older adults (Hagen et al., 2005), participants described a number of cognitive and behavioral strategies they used to prevent their gambling from becoming problematic. Cognitive strategies included realizing the danger, recognizing the odds against them, and not considering themselves “lucky.” Behavioral strategies included only taking a preset amount of money and stopping when that money was gone, quitting while ahead and not reinvesting wins, making money and time go farther while gambling, and not gambling alone. In a state-administered casino self-exclusion program, which was the predominant harm-reduction strategy used by the gaming industry to help problem gamblers limit losses. Nower and Błaszczyński (2008) examined characteristics of older adults with PG who banned themselves from casinos using the casinos’ voluntary self-exclusion program. Their results indicated that starting gambling in midlife, experiencing gambling problems around age 60, a preference for nonstrategic forms of gambling, and fear of suicide were predictive factors of self-exclusion from gambling among older adults.

Although these studies significantly add to our knowledge base, studies on protective factors for gambling behavior among older adults are limited and under investigated. Moreover, few studies have examined the factors contributing to recovery and rehabilitation from gambling addictions among older adults. Further studies to examine protective factors for gambling or motivational factors for self-exclusion from gambling are particularly needed.

**Negative Health Outcomes From Gambling**

Although financial, legal, and occupational problems resulting from gambling among older adults are rarely reported in the literature, negative psychological and health outcomes from gambling among older adults are well documented in many studies (e.g., Bazargan et al., 2001; Erickson et al., 2005; McNeilly & Burke, 2000; Pietrzak, Molina, Ladd, Kerins, & Petry, 2005). A study of a nationally representative sample of 10,563 older adults suggested that compared with older adults without a history of regular gambling, recreational gamblers and disordered gamblers had significantly elevated rates of alcohol, nicotine, and illegal drug use and higher rates of mood, anxiety, and personality disorders (Pietrzak et al., 2007). Studies also found that older adults with disordered gambling had elevated rates of comorbid psychiatric disorders including mood, anxiety, and personality disorders (Kerber et al., 2008).

Previous studies have found that older adults with PG and PGD suffered from significantly greater physical and mental health problems than nonproblem gamblers (Erickson et al., 2005). One study indicated that older adults with disordered gambling reported increased severity of family (e.g., poor role functioning), social, medical (e.g., lower vitality level, arthritis), psychiatric (e.g., depression, anxiety, paranoid ideation), and alcohol problems compared with noninfrequent gamblers (Pietrzak et al., 2005). Another study also indicated that older adults suffering from PGD reported a greater number of stressful life events, higher levels of anxiety, a greater number of obsessive-compulsive symptoms, and a lower level of control over their future health status (Bazargan et al., 2001).

Compared with those with PG, adverse health impacts are more significant and severe among those with PGD. A clinical study among a group of older gamblers with PG and PGD indicated that the latter group reported increased severity of gambling, family, social, and emotional problems and scored higher on the measures of depression and loneliness compared with the former (Pietrzak & Petry, 2006). McNeilly and Burke (2000) reported that those with PGD had the highest incidence of depression, the lowest reported life satisfaction, and the most frequent spending on gambling. Morasco and colleagues (2006) found that a diagnosis of PGD was associated with higher rates of medical utilization.

Some research has compared health consequences between older gamblers and younger gamblers. Kausch (2004) reported that older gamblers were just as likely as younger gamblers to have a lifetime history of serious suicidal ideation and that they were equally likely as the younger cohort to have a psychiatric diagnosis, mainly depression (Kausch, 2004). However, results of another study indicated that older adult problem gamblers were less likely to report gambling-related mental health problems compared with younger adult problem gamblers (Potenza, Steinberg, Wu, Rounsaville, & O’Malley, 2006).

Older adults were hesitant to deal with their gambling addiction issues (Bjelde et al., 2008) and less likely than younger adults to seek mental health services or professional treatment when faced with such challenges (Atchley & Barusch, 2004). Bjelde and colleagues (2008) argued that, among older adults, their reluctance to discuss mental health issues and lack of recognition of gambling as an illness affected treatment-seeking behavior. On the other hand, Zoellner (2002) reported that women called the PG hotline service readily (made up 75% of the calls to Gamblers
Positive Health Outcomes From Gambling

Although most studies on gambling have focused on its adverse mental health and social consequences, Shaffer and Korn (2002) have posited the normative elements of gambling as a form of adult play for fun and excitement. In fact, according to the National Academy of Science (Committee on the Social and Economic Impact of Pathological Gambling, National Research Council, 1999), about 98% of Americans gamble recreationally and without any clinically significant problems. The casino industry’s American Gaming Association states that older adult gambling has far more positive than negative outcomes for individuals and communities by providing fun, excitement, and opportunities for socializing (McVey, 2003). Beyond recreation, some types of gambling actually appear to enhance coping strategies by building skills and competencies such as memory enhancement, problem solving through game tactics, mathematical proficiency, concentration, and hand–eye coordination (Rowe & Kahn, 1997; Shaffer & Korn, 2002).

Observational studies of older adults’ gambling behaviors have found that gambling increased older adults’ self-esteem (Campbell, 1976; Volberg, Reitjes, & Boles, 1997). Along similar lines, a study by Loroz (2004) indicated that gambling was a popular recreation choice for older adults because of hedonic responses of “fantasies, feelings, and fun” and that the psychological benefits of gambling may ultimately reinforce and enhance older adults’ self-concept. In a study based on a nationally representative sample of 2,417 adults, Desai and colleagues (2004) reported that older recreational gamblers were more likely to report better health than were older nongamblers and that recreational gambling in older adults was not associated with negative measures of health and well-being in contrast to findings in younger adults (aged 18–64 years). A two-stage study (using both a mail-in survey and an in-depth interview) in a small sample of 146 older adults aged 60 or over found no evidence that casino gambling activities threatened their well-being (Hope & Havir, 2002). A study among a community cohort of 1,016 older adults also indicated that gambling participation in certain forms and contexts (e.g., the state lottery, going to the race track, and playing bingo for charity) could all have positive social and psychological outcomes (Vander Bilt et al., 2004). A study with a nationally representative sample of 43,093 noninstitutionalized U.S. residents also reported that recreational gambling was associated not only with some negative measures but also with some positive measures (Desai et al., 2007). Therefore, health benefits from recreational gambling among older adults are evident, and a major focus of scientific studies in the field is on how to minimize harm or adverse health impacts.

Another commonly documented positive outcome from gambling is that gambling may offer older adults a source of social benefit or social support which in turn can positively affect their well-being (Everard, Lach, Fisher, & Baum, 2000; Hope & Havir, 2002; Preston et al., 2007; Vander Bilt et al., 2004). Gambling gives older adults a chance to cope with loneliness or negative emotions such as anxiety or depression (Vander Bilt et al., 2004) and may make them feel young and alive again (Bjelde et al., 2008). Nevertheless, studies on the relationship between social support and gambling among older adults revealed mixed findings. In a study among a community cohort of 1,016 older adults, results of both cross-sectional and longitudinal data analysis indicated that gambling participation was associated with greater social support (Vander Bilt et al., 2004). A multisite study among older ethnic Chinese in Canada also indicated that having a higher level of social support was a predictive factor for gambling participation (Lai, 2006). This finding on Chinese gambling and social support may be particularly relevant given the majority of Chinese popular gambling activities are group games, for example, mahjong and pai gow. However, a U.S. study among 1,410 randomly selected older adults in Detroit, MI, revealed that older adults who reported having a larger social support network were less likely to visit casinos, whereas older adults who frequently visited casinos had less social support than older adults who had infrequent or no visits to casinos (Zaranek & Chapleski, 2005). These findings suggest that gambling may offer a form of natural social support for older adults and that social isolation or loneliness may make older adults vulnerable to higher levels of participation in gambling; on the other hand, social isolation or a limited social network may reduce the opportunity for gambling in particular those group gambling activities (Lai, 2006; McNeilly & Burke, 2001; Zaranek & Chapleski, 2005; Zaranek, & Lichtenberg, 2008).

Conclusion

This systematic review of the prevalence of disordered gambling, motivators of gambling participation, risk and protective factors of disordered gambling, and diverse health outcomes from gambling has identified the fairly fragmented state of the field. The present authors review six limitations subsequently and offer recommendations for developing this area of research. Table 2 summarizes these main points. First, most studies were conducted in the context of Western culture and in developed regions. Although some studies were conducted with a sample that included multiple racial/ethnic groups, studies that focused on gambling among diverse racial/ethnic groups were very limited. Because culture, values, and beliefs influence gambling participation, gambling patterns, and attitudes or actions toward seeking professional help (Raylu & Oei, 2004), further studies in different cultural contexts and among different racial/ethnic groups are needed. Second, there is
such a diversity of measurement tools and little evidence on which tools are accurate. More rigorous testing of gambling instruments will increase accuracy in estimating the prevalence rates of gambling and will support an analytical inquiry to identify determinants related to gambling. Third, although various theoretical assumptions have been applied to explain the causes and consequences of gambling, empirical evidence is limited. More empirical evidence based on rigorous experimental studies testing the causality of gambling mechanism is needed to inform a theoretical approach. Such an approach can serve as the basis for more advanced studies on prevention and intervention for PG and PGD, and health promotion and education programs for older adults. Fourth, most of the studies have been predominantly quantitative and population-level survey studies. There is a pressing need to conduct more theory-driven qualitative studies to examine the very complex dynamics among older adults, specific games individuals play, gambling settings, and the trajectory of changes over time. Fifth, most of the studies on older adults’ gambling mainly examine adverse health consequences of gambling and associated risk factors. This skewed view may be limited in its ability to suggest meaningful protective factors within the context of productive aging (Gergen & Gergen, 2002; Khaw, 1997). Knowledge of preventive strategies for disordered gambling could inform the design of intervention programs and research on health promotion. Longitudinal studies comparing older adults who gamble but do not experience harm and those who gamble and suffer from PG or PGD will yield pertinent information on protective factors against gambling-related harms. Lastly, although a great majority of studies focused on conventional and commercial gambling, internet-based gambling or online gambling was rarely examined. With the increased availability of online gambling and its ease of accessibility, older adults may be more likely to take part in online gambling at home. Future studies should be more inclusive of alternative forms of gambling to reflect changes in lifestyles among older adults. It is worth noting that the earlier discussion may also reflect the state of the larger gambling studies literature across various age groups.

The larger public is generally interested in eliminating problems and harms caused by disordered gambling and maximizing health benefits from a form of recreational gambling for older adults (Basham & Luik, 2011; Williams, Belanger, & Arthur, 2011). Future empirical studies should attend to specific methodological issues such as target sample particularly focusing on well-being issues of older adults who gamble, sampling design, measurements, and taking into account older adults’ adjustment to the aging process in the 21st century context (Hooyman & Kiyak, 2011). It is imperative that studies on older adults and gambling will move beyond risk analyses to a focus on early help-seeking behaviors, fundamental character strengths, and personal inspirations, which will prevent older adults from developing disordered gambling or enhance their recovery from gambling-related harms.

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